





STORAGE



RESULTS

OF THE

ASTRONOMICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1848.

26403
29/3/93.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1848.)

ROYAL OBSERVATORY, GREENWICH.

C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

FOR 1848, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1848 :

WITH THE ANNUAL VARIATIONS.

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CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, JAN. 1, 1848,
OF STARS OBSERVED IN THE YEAR 1848; WITH THE ANNUAL VARIATIONS.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Fraction of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
1	α Andromedæ	27	0.79	^h 0. ^m 0.32.34	+3.083	16	15			^o 61. 44. 55.37	54.59	"	"	31	0.85	54.99	-19.910
2	β Cassiopeiæ S. P. .			0. 1.(10)		3				31. 41. 19.13				3	0.34	19.13	19.885
3	{ B. A. C. 10. }	3	0.78	0. 1.35.65	3.078					118. 50.							
	{ κ^1 Sculptoris }																
4	{ B. A. C. 23. }	3	0.72	0. 3.50.83	3.059					118. 39.							
	{ κ^2 Sculptoris }																
5	γ Pegasi	21	0.84	0. 5.24.77	3.082	6				75. 39. 43.40				6	0.89	43.40	20.038
6	θ Andromedæ			0. 9.(10)		13	12			52. 9.46.52	45.48			25	0.86	46.02	20.029
7	ι Sculptoris	3	0.72	0. 13.52.51	3.025					119. 49.							
8	10 Ceti			0. 18.(50)		3				90. 53. 30.87				3	0.82	30.87	19.987
9	12 Ceti			0. 22.(20)		3				94. 47. 52.97				3	0.83	52.97	19.950
10	13 Cassiopeiæ S. P. .			0. 22.(40)		2				24. 19. 13.89				2	0.33	13.89	19.947
11	Groombridge 86. .			0. 24.(20)		1				36. 43. 5.29				1	0.81	5.29	19.942
12	*			0. 27 \pm		1				98. 44. 23.06				1	0.65	23.06	
13	α Cassiopeiæ	14	0.53	0. 31.54.68	3.349	20	18			34. 17. 48.68	49.62			44	0.73	49.12	19.823
	α Cassiopeiæ S. P. .					4		2		49.51		48.27					
14	β Ceti	27	0.76	0. 35.57.42	3.013	11				108. 49. 18.54				11	0.86	18.54	19.836
15	B. A. C. 205.	1	0.81	0. 37.39.79	3.056	5				95. 27. 48.23				5	0.84	48.23	19.714
16	20 Ceti	1	0.70	0. 45.14.57	3.064					91. 58.							
17	B. A. C. 245.			0. 46.(30)		1	1			42. 8.48.36	45.57			2	0.81	46.97	19.643
18	γ Cassiopeiæ			0. 47.(30)		7	7			30. 6.27.04	28.32			14	0.89	27.68	19.643
19	μ Andromedæ			0. 48.(20)		7	6			52. 19. 35.59	34.23			13	0.93	34.96	19.680
20	*	1	0.80	0. 50.19.46	3.016					100. 41.							
21	Weisse O. 907 ...	1	0.80	0. 51.48.48	3.060					92. 1.							
22	Weisse O. 976 ...			0. 55.(20)		2				100. 40. 54.09				2	0.82	54.09	19.472
23	ϵ Piscium	1	0.70	1. 0.32.72	3.083					85. 9.							
24	33 Ceti	5	0.83	1. 2.44.37	3.083	5				88. 21. 53.52				5	0.84	53.52	19.317
25	*	9	0.36	1. 4. 2.71	17.151					1.30.							
26	Polaris	102	0.55	1. 4.25.99	17.370	12	11	2	1	1.30. 2.31	3.41	5.26	3.23	54	0.50	2.98	19.284
	Polaris S. P.					5		11	12	4.00		2.46	2.90				
27	37 Ceti			1. 6.(40)		3				98. 44. 29.06				3	0.84	29.06	19.541
28	38 Ceti	5	0.83	1. 7. 3.58	3.056	5				91. 47. 19.15				5	0.84	19.15	19.412
29	40 Ceti			1. 9.(10)		3				93. 4.38.88				3	0.82	38.88	19.058
30	θ Ceti	20	0.59	1. 16.25.54	3.000	9				98. 58. 9.36				9	0.70	9.36	18.749
31	Λ Cassiopeiæ			1.20.(0)		3	3			20. 31. 11.00	12.48			6	0.65	11.74	18.765
32	* (i_1) Weisse I. 346	2	0.89	1.20.17.10	3.047					92. 49.							
33	Weisse I. 375.	2	0.97	1.22. 5.88	3.067					90. 25.							
34	μ Piscium	3	0.80	1.22.13.49	3.137	1				84.38.30.14				1	0.93	30.14	18.597
35	B. A. C. 458.			1.24.(30)		1				120.46.10.10				1	0.98	10.10	18.707
36	*	1	0.98	1.25.20.63	3.080					88.59.							
37	*			1.26.(40)		1				88.12.58.95				1	0.01	58.95	18.638
38	B. A. C. 472.	3	0.95	1.26.58.91	3.072					89.49.							
39	*	1	0.98	1.27.18.13	3.080					88.59.							
40	ω Cassiopeiæ			1.31.(10)		1	1			22.43.42.08	43.05			2	0.85	42.57	18.529
41	Weisse I. 564 ...	2	0.97	1.31.55.08	3.060					93.17.							
42	B. A. C. 527.			1.35.(20)		1				123. 5.46.30				1	0.01	46.30	18.365
43	ϕ Piscium	3	0.73	1.37.22.19	+3.162	1				81.36.33.59				1	0.71	33.59	-18.312

20. Of the 11th magnitude.

36 and 39. Of the 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T.D.	T.R.	J.D.	J.R.	T.D.	T.R.	J.D.	J.R.				
44	Lalande 3225			^h ^m ^s 1. 38. (0)	"	1				^o ['] ["] 61. 9. 0.46	"	"	"	1	0.04	0.46	-18.249
45	Lalande { 3230 } { 3231 } ..	1	0.98	1. 38. 3.46	+3.097					87. 21.							
46	ε Sculptoris			1. 38. (30)		1				115. 48. 50.46				1	0.97	50.46	18.241
47	Piazzi I. 182	2	0.95	1. 41. 55.55	2.954					101. 27.							
48	χ Ceti	1	0.97	1. 42. 7.19	2.946					101. 26.							
49	ε Cassiopeiae			1. 43. (30)		2	2			27. 4. 53.21	54.85			4	0.01	54.03	18.044
50	α Trianguli			1. 44. (30)		6	6			61. 9. 51.30	50.66			12	0.92	50.98	17.796
51	50 Cassiopeiae			1. 50. (30)		1	1			18. 19. 7.17	4.11			2	0.98	5.64	17.789
52	α Piscium	2	0.93	1. 54. 11.22	3.102	3				87. 58. 21.65				3	0.94	21.65	17.627
53	Weisse I. 986	1	0.98	1. 54. 56.49	3.045					92. 21.							
54	α Arietis	16	0.61	1. 58. 36.85	3.362	10	6			67. 15. 33.09	33.09			16	0.60	33.09	17.289
55	64 Ceti			2. 3. (20)		1				82. 8. 41.85				1	0.93	41.85	17.211
56	ξ ¹ Ceti	2	0.85	2. 4. 56.71	3.169					81. 52.							
57	μ Fornacis			2. 6. (10)		3				121. 26. 18.14				3	0.98	18.14	17.012
58	Bradley 328	2	0.96	2. 12. 16.29	4.182					33. 18.							
59	κ Fornacis	1	0.98	2. 15. 35.23	2.756					114. 31.							
60	B. A. C. 744			2. 16. (40)		1	1			23. 17. 7.26	5.26			2	0.99	6.26	16.594
61	ξ Arietis	1	0.99	2. 16. 40.59	3.205	2				80. 4. 51.24				2	0.98	51.24	16.544
62	B. A. C. 750	1	0.99	2. 18. 1.80	3.211					80. 2.							
63	B. A. C. 755			2. 18. (40)		1				80. 7. 18.84				1	0.98	18.84	16.366
64	ξ ² Ceti	3	0.80	2. 20. 4.94	3.182	2				82. 13. 27.19				2	0.89	27.19	16.425
65	14 Trianguli			2. 22. (50)		1				54. 31. 49.27				1	0.97	49.27	16.265
66	B. A. C. 784	2	0.98	2. 26. 16.50	8.010	1				9. 12. 14.18				1	0.99	14.18	16.107
67	ν Ceti			2. 27. (50)		1	1			85. 4. 22.80	24.46			2	0.01	23.63	15.996
68	Weisse II. 497 ...			2. 29. (0)		1				103. 33. 42.77				1	0.99	42.77	15.964
69	12 Persei			2. 32. (40)		2	2			50. 27. 8.97	10.58			4	0.95	9.78	15.606
70	θ Persei			2. 33. (50)		1	1			41. 25. 5.90	6.32			2	0.97	6.11	15.604
71	γ Ceti	5	0.59	2. 35. 25.69	3.100	3				87. 24. 28.06				3	0.34	28.06	15.448
72	{ B. A. C. 845. ... } { μ Ceti	4	0.62	2. 36. 43.82	3.232					80. 32.							
73	π Arietis			2. 40. (50)		1				73. 10. 16.34				1	0.01	16.34	15.355
74	41 Arietis			2. 41. (0)		4				63. 22. 10.72				4	0.73	10.72	15.206
75	β Fornacis	2	0.97	2. 42. 43.74	2.509	1				123. 2. 49.26				1	0.98	49.26	15.417
76	B. A. C. 896			2. 46. (10)		1				11. 11. 25.48				1	0.04	25.48	15.029
77	ρ ³ Arietis	2	0.95	2. 47. 51.82	3.374					72. 35.							
78	4 Eridani	1	0.97	2. 50. 38.26	2.666					114. 29.							
79	B. A. C. 948	1	0.98	2. 54. 9.36	4.440					33. 54.							
80	α Ceti	3	0.64	2. 54. 20.31	3.126	5				86. 30. 35.03				5	0.78	35.03	14.419
81	* (c ₂₇) Lalande 5706			2. 56. (50)		1				111. 57. 29.05				1	0.01	29.05	14.375
82	Lalande 5728			2. 57. (50)		1				112. 0. 16.88				1	0.01	16.88	14.314
83	Weisse II. 1090 ...			3. 1. (10)		1				100. 7. 53.96				1	0.99	53.96	14.109
84	Weisse III. 23.			3. 2. (20)		1				100. 9. 26.35				1	0.99	26.35	14.036
85	δ Arietis	3	0.67	3. 2. 56.67	3.418	2	1			70. 51. 7.80	4.70			3	0.66	6.77	14.008
86	12 Eridani	2	0.02	3. 5. 37.09	2.550					119. 35.							
87	* (o ₁) Lalande 6094	2	0.06	3. 10. 53.28	4.836	3				29. 15. 56.37				3	0.04	56.37	13.493
88	15 Eridani			3. 11. (40)		2				113. 4. 12.14				2	0.98	12.14	13.442
89	α Persei	6	0.51	3. 13. 29.72	4.238	1		1		40. 41. 5.97		6.51		2	0.28	6.24	13.270
90	ο Tauri	5	0.62	3. 16. 38.32	+3.222	3	1			81. 30. 36.38	36.52			4	0.27	36.42	-13.055

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—continued.

No.	Star's Name	Num- ber of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
91	ξ Tauri.....	6	0.29	3. 18. 56.12 ^{h m s}	+3.243	1				80. 48. 3.90 ^{o ' "}	"	"	"	1	0.04	3.90	-12.923
92	Weisse III. 680...			3. 35. (30)		1				100. 59. 30.30				1	0.01	30.30	11.824
93	Weisse III. 698...			3. 36. (20)		2				100. 58. 14.60				2	0.05	14.60	11.764
94	γ Tauri.....	6	0.29	3. 38. 27.36	3.552	2	1			66. 22. 10.48	11.14			3	0.06	10.70	11.562
95	B. A. C. 1211.....			3. 44. (50)		1	1			9. 43. 57.86	59.48			2	0.09	58.67	11.203
96	*			3. 48. (20)		1				22. 5. 31.42				1	0.09	31.42	10.898
97	γ Eridani.....	5	0.28	3. 50. 56.40	2.796	3				103. 56. 41.18				3	0.39	41.18	10.604
98	α ¹ Tauri.....	4	0.03	3. 55. 42.91	3.534	2	2			68. 20. 17.54	17.39			4	0.03	17.47	10.290
99	Weisse III. 1186..	1	0.09	4. 0. 32.52	3.339					77. 0.							
100	B. A. C. 1280.....	2	0.11	4. 1. 31.36	7.637					14. 17.							
101	*			4. 3. (50)		1				75. 27. 45.80				1	0.09	45.80	9.735
102	Weisse IV. 93....	1	0.09	4. 5. 22.59	3.327					77. 38.							
103	B. A. C. 1300.....			4. 6. (30)		1	1			25. 14. 18.03	20.34			2	0.01	19.19	9.501
104	*	1	0.04	4. 10. 22.91	3.437	1				72. 50. 44.72				1	0.04	44.72	9.230
105	γ Tauri.....	3	0.05	4. 11. 8.97	3.407	2	2			74. 44. 38.45	39.40			4	0.10	38.93	9.150
106	Lalande 8085.....	1	0.01	4. 11. 13.11	3.415	1				73. 50. 56.11				1	0.01	56.11	9.165
107	δ ¹ Tauri.....	1	0.97	4. 14. 10.61	3.450					72. 49.							
108	δ ² Tauri.....	3	0.37	4. 15. 20.50	3.451	1	1			72. 54. 47.60	46.60			2	0.09	47.10	8.844
109	Groombridge 828..	1	0.13	4. 15. 57.97	6.767					17. 48.							
110	δ ³ Tauri.....			4. 16. (40)		1				72. 25. 29.43				1	0.13	29.43	8.749
111	Lalande 8336.....	1	0.09	4. 18. 9.03	3.482	1				71. 13. 32.56				1	0.09	32.56	8.622
112	ε Tauri.....	2	0.06	4. 19. 44.76	3.494					71. 10.							
113	1 Camelopardali..	1	0.13	4. 20. 0.70	4.719					36. 26.							
114	B. A. C. 1391.....	1	0.09	4. 21. 51.89	3.427					74. 8.							
115	85 Tauri.....	3	0.07	4. 23. 11.10	3.416					74. 29.							
116	47 Eridani.....			4. 26. (50)		2				98. 33. 13.66				2	0.09	13.66	7.930
117	Aldebaran.....	20	0.44	4. 27. 12.22	3.433	7	3	2	2	73. 48. 4.88	5.27	3.80	6.86	14	0.47	5.09	7.730
118	B. A. C. 1428.....			4. 28. (30)		1				14. 20. 51.49				1	0.13	51.49	7.696
119	ζ ⁷ Eridani.....	1	0.97	4. 29. 38.68	2.333					120. 53.							
120	ε ² Tauri.....	2	0.55	4. 31. 35.80	3.336	3				78. 6. 22.52				3	0.10	22.52	7.576
121	Piazzi IV. 194....	2	0.05	4. 40. 49.82	3.422					74. 23.							
122	96 Tauri.....			4. 41. (0)		1				74. 21. 59.62				1	0.97	59.62	6.697
123	δ ¹ Orionis.....	3	0.07	4. 43. 56.24	3.388					76. 0.							
124	Weisse IV. 1048..	1	0.97	4. 47. 34.89	3.381	1				76. 16. 10.41				1	0.97	10.41	6.233
125	Weisse IV. 1081..			4. 49. (10)		1				76. 18. 32.65				1	0.97	32.65	6.101
126	Weisse IV. 1086..	1	0.97	4. 49. 13.37	3.383	1				76. 14. 19.66				1	0.97	19.66	6.097
127	Weisse IV. 1096..	1	0.97	4. 49. 43.83	3.382	1				76. 17. 2.50				1	0.97	2.50	6.054
128	β Camelopardali..	2	0.10	4. 49. 55.03	5.303	2	2			29. 47. 17.97	18.40			4	0.05	18.19	6.018
129	Weisse IV. 1199..	1	0.97	4. 53. 45.07	3.384					76. 19.							
130	ι Tauri.....	4	0.28	4. 54. 0.80	3.581	2				68. 37. 55.67				2	0.49	55.67	5.655
131	11 Orionis.....	5	0.08	4. 55. 53.20	3.424	3	1			74. 48. 45.28	45.77			4	0.06	45.40	5.498
132	Weisse IV. 1312..	1	0.97	4. 58. 7.08	3.389					76. 7.							
133	15 Orionis.....	5	0.11	5. 1. 0.07	3.430					74. 36.							
134	Weisse V. 11.....	1	0.97	5. 1. 38.48	3.389	1				76. 12. 7.84				1	0.97	7.84	5.053
135	Weisse V. 12.....	1	0.97	5. 1. 38.92	3.388	1				76. 12. 33.67				1	0.97	33.67	5.053
136	Weisse V. 48.....	2	0.53	5. 3. 20.85	3.398	1				75. 49. 41.69				1	0.09	41.69	4.908
137	Capella.....	14	0.28	5. 5. 28.01	4.418	9	8	8	7	44. 9. 47.91	47.60	49.08	48.06	32	0.38	48.16	4.297
138	Weisse V. 136....	1	0.97	5. 6. 14.71	2.822					98. 20.							
139	Rigel.....	26	0.38	5. 7. 14.01	2.880	2				98. 22. 54.67				2	0.55	54.67	- 4.565
140	16 Camelopardali..	1	0.97	5. 10. 27.29	+5.107					32. 37.							

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T.D.	T.R.	J.D.	J.R.	T. D.	T. R.	J. D.	J. R.				
141	λ Leporis.....			^h 5. 12. (30)	"	2				^o 103. 20. 17.53	"	"	"	2	0.53	17.53	-4.106
142	B. A. C. 1657....	1	0.97	5. 13. 46.39	+3.064					90. 34.							
143	σ Orionis.....	1	0.97	5. 14. 0.14	3.064					90. 32.							
144	m Orionis.....			5. 14. (50)		1				86. 36. 24.34				1	0.09	24.34	3.916
145	Weisse V. 343....			5. 14. (50)		1				86. 35. 54.88				1	0.09	54.88	3.926
146	β Tauri.....	23	0.42	5. 16. 41.13	3.788	4	2			61. 31. 36.38	36.78			6	0.27	36.51	3.567
147	σ Tauri.....	2	0.13	5. 18. 30.43	3.602					68. 12.							
148	B. A. C. 1706....			5. 19. (30)		3	3			15. 4. 9.38	9.67			6	0.09	9.53	3.526
149	β Leporis.....	1	0.09	5. 21. 44.08	2.572	2				110. 53. 3.96				2	0.11	3.96	3.253
150	χ Aurigæ.....	1	0.09	5. 22. 50.15	3.905					57. 56.							
151	119 Tauri.....	2	0.12	5. 23. 18.24	3.516					71. 31.							
152	δ Orionis.....	8	0.33	5. 24. 14.50	3.066	1				90. 24. 58.83				1	0.13	58.83	3.074
153	α Leporis.....	6	0.10	5. 26. 1.61	2.648	1				107. 56. 6.62				1	0.13	6.62	2.970
154	θ^2 Orionis.....			5. 27. (50)		1				95. 31. 15.61				1	0.09	15.61	2.796
155	ϵ Orionis.....	13	0.38	5. 28. 30.08	3.043	1				91. 18. 14.91				1	0.16	14.91	2.736
156	ζ Tauri.....	3	0.66	5. 28. 33.77	3.585	1				68. 57. 21.31				1	0.19	21.31	2.722
157	ω Orionis.....	1	0.09	5. 31. 9.69	3.170	4				85. 58. 12.16				4	0.12	12.16	2.527
158	d Orionis.....	2	0.14	5. 31. 32.03	2.902					97. 18.							
159	α Columbae.....	2	0.55	5. 34. 8.80	2.177	3				124. 9. 33.71				3	0.43	33.71	2.256
160	γ Leporis.....	1	0.13	5. 38. 7.62	2.500					112. 30.							
161	130 Tauri.....	2	0.15	5. 38. 34.42	3.496					72. 20.							
162	Santini 385.....			5. 39. (40)		1				82. 5. 58.77				1	0.13	58.77	1.777
163	31 Camelopardali..			5. 41. (20)		2	2			30. 9. 16.01	17.50			4	0.11	16.76	1.563
164	137 Tauri.....			5. 43. (40)		1				75. 52. 20.19				1	0.19	20.19	1.408
165	B. A. C. 1879....			5. 45. (0)		1	1			3. 14. 33.44	34.49			2	0.12	33.97	1.207
166	α Orionis.....	21	0.39	5. 46. 56.58	3.247	6	3	3	3	82. 37. 35.46	34.85	35.57	38.29	15	0.27	35.93	1.141
167	*	1	0.09	5. 47. 10.42	4.222	1				49. 13. 42.20				1	0.09	42.20	1.122
168	* (k_4)	2	0.09	5. 47. 36.79	4.222	2				49. 14. 20.21				2	0.09	20.21	1.083
169	θ Aurigæ.....	1	0.19	5. 49. 21.41	4.092					52. 48.							
170	η Leporis.....			5. 49. (30)		2				104. 11. 59.19				2	0.16	59.19	1.068
171	2 Geminorum.....			5. 57. (30)		3	1			66. 21. 12.46	11.27			4	0.13	12.16	-0.168
172	3 Geminorum.....			6. 0. (30)		2				66. 52. 4.45				2	0.16	4.45	+0.064
173	κ Columbae.....	1	0.19	6. 11. 8.62	2.133	1				125. 5. 36.17				1	0.19	36.17	1.005
174	μ Geminorum.....	11	0.34	6. 13. 45.80	3.636	7	5			67. 24. 49.97	50.43			12	0.13	50.16	1.336
175	β Canis Majoris...	1	0.16	6. 16. 0.41	2.643					107. 53.							
176	3 Canis Majoris...	1	0.19	6. 16. 33.49	2.197					123. 22.							
177	ν Geminorum.....	1	0.16	6. 19. 56.25	3.566					69. 42.							
178	Piazzi VI. 157....			6. 27. (0)		1				73. 26. 16.02				1	0.09	16.02	2.357
179	Cephei 51 (Hev.)..	11	0.42	6. 27. 30.95	30.744					2. 45.							
180	γ Geminorum.....	1	0.72	6. 28. 55.71	3.469	3	1			73. 28. 34.46	33.94			4	0.11	34.33	2.546
181	42 Camelopardali..			6. 35. (0)		2	2			22. 16. 12.75	13.61			4	0.15	13.18	3.041
182	B. A. C. 2210....			6. 37. (50)		5	5			12. 50. 33.27	33.80			10	0.12	33.54	3.326
183	Sirius.....	27	0.30	6. 38. 27.03	2.645	6		4	1	106. 30. 40.11		39.67	41.93	11	0.39	40.12	4.579
184	* (n_4)	1	0.09	6. 43. 10.70	4.585					40. 55.							
185	ϵ Canis Majoris...	14	0.20	6. 52. 39.21	2.360	8				118. 46. 7.78				8	0.17	7.78	4.558
186	* (n_6).....	2	0.13	6. 59. 52.25	4.094	2				51. 37. 55.50				2	0.15	55.50	5.180
187	18 Lyncis.....			7. 2. (40)		1	1			30. 5. 57.92	58.20			2	0.16	58.06	+5.746
188	51 Geminorum.....	5	0.17	7. 4. 38.35	3.454					73. 35.							
189	B. A. C. 2377....	1	0.13	7. 6. 43.02	11.241					8. 49.							
190	λ Geminorum.....	4	0.18	7. 9. 21.17	+3.458					73. 11.							

144, 145. In the original Circle Observations on February 2, page 8, these stars have been placed in the wrong order.

189. The R. A. of this star differs four seconds from the B. A. C. It appears to have been brought up incorrectly in that catalogue.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
191	δ Geminorum.....	11	0·28	^h 7. 11. ^m 2·40 ^s	+3·597	4	3			[°] 67. 44. ['] 35·01 ["] 33·74	"	"	7	0·20	34·47	+ 6·130	
192	B. A. C. 2439.....			7. 15.(0)		1	1			21. 13. 57·66	59·35		2	0·13	58·51	6·517	
193	ρ Geminorum.....			7. 19.(20)		1				57. 55. 8·51			1	0·22	8·51	6·784	
194	Castor.....	20	0·34	7. 24. 53·54	3·842	2	1			57. 47. 2·26	1·21		3	0·18	1·91	7·338	
195	68 Geminorum....	3	0·15	7. 24. 55·70	3·433	1				73. 51. 5·46			1	0·13	5·46	7·222	
196	Procyon.....	32	0·37	7. 31. 20·51	3·146	6	5	2		84. 23. 21·36	21·48	22·37	13	0·23	21·56	8·833	
197	κ Geminorum.....	4	0·44	7. 35. 15·87	3·634	2				65. 14. 32·73			2	0·50	32·73	8·148	
198	Pollux.....	31	0·37	7. 36. 0·37	3·683	4	2	3		61. 36. 42·19	43·29	42·07	9	0·29	42·39	8·219	
199	B. A. C. 2596.....			7. 41.(50)		1	1			15. 41. 9·81	10·49		2	0·22	10·15	8·621	
200	26 Lyncis.....			7. 43.(40)		1	1			42. 2. 50·05	49·70		2	0·14	49·88	8·806	
201	8 Cancri.....	1	0·27	7. 56. 36·12	3·353	1				76. 27. 11·75			1	0·27	11·75	9·818	
202	12 Cancri.....	3	0·22	8. 0. 12·42	3·363					75. 55.							
203	15 Argūs.....	7	0·21	8. 1. 4·25	2·558	8				113. 52. 10·26			8	0·21	10·26	10·030	
204	ζ Cancri (N. star)..	3	0·63	8. 3. 29·19	3·455	2				71. 53. 53·80			2	0·87	53·80	10·400	
205	15 Cancri.....			8. 3.(40)		4	1			59. 53. 34·14	34·11		5	0·17	34·13	10·364	
206	30 Lyncis.....			8. 8.(10)		5	1			31. 47. 21·85	22·30		6	0·20	21·93	10·619	
207	ο Ursæ Majoris....			8. 17.(40)		3	3			28. 46. 47·43	46·86		6	0·20	47·15	11·455	
208	29 Cancri.....	1	0·27	8. 20. 8·07	3·360					75. 17.							
209	θ Cancri.....	1	0·20	8. 22. 55·30	3·435	1				71. 23. 46·49			1	0·20	46·49	11·761	
210	π Ursæ Majoris...			8. 26.(50)		3	1			25. 8. 50·21	50·97		5	0·29	50·40	11·978	
	π Ursæ Majoris S. P.					1				50·37							
211	Groombridge 1452.	1	0·24	8. 28. 25·80	9·480					9. 27.							
212	{ β Pixid. Naut. }			8. 34.(10)		1				124. 46. 20·82			1	0·14	20·82	12·595	
	{ δ Mali..... }																
213	γ Cancri.....	2	0·19	8. 34. 28·86	3·488	1	1			67. 59. 18·69	20·35		2	0·24	19·52	12·487	
214	*	1	0·24	8. 34. 35·53	4·596					34. 24.							
215	δ Cancri.....	2	0·53	8. 36. 2·41	3·425	1				71. 17. 27·01			1	0·87	27·01	12·862	
216	*			8. 37.(50)		2				31. 47. 59·29			2	0·18	59·29	12·745	
217	A ² Cancri.....	3	0·23	8. 38. 35·75	3·298					77. 20.							
218	ε Hydræ.....	6	0·23	8. 38. 43·29	3·189	4	2			83. 1. 38·56	37·48		6	0·26	38·20	12·837	
219	ρ ³ Cancri.....			8. 46.(30)		2	1			61. 29. 48·22	46·43		3	0·19	47·62	13·362	
220	σ ³ Cancri.....			8. 48.(40)		3				59. 11. 11·71			3	0·21	11·71	13·433	
221	ι Ursæ Majoris....	10	0·36	8. 48. 46·41	4·150	3				41. 21. 56·25			3	0·24	56·25	13·758	
222	α Cancri.....	2	0·91	8. 50. 10·15	3·293	2				77. 33. 26·88			2	0·91	26·88	13·591	
223	σ ¹ Ursæ Majoris...			8. 55.(0)		2	2			22. 31. 19·39	19·34		4	0·18	19·37	13·908	
224	ξ Cancri.....			9. 0.(40)		1	1			67. 20. 36·54	35·64		2	0·22	36·09	14·203	
225	79 Cancri.....			9. 1.(40)		1				67. 23. 21·98			1	0·14	21·98	14·294	
226	c Ursæ Majoris...			9. 2.(20)		2	2			27. 57. 20·25	19·64		4	0·25	19·95	14·384	
227	17 Ursæ Majoris..			9. 4.(30)		2	1			32. 37. 57·85	57·92		3	0·20	57·87	14·526	
228	α Hydræ.....	16	0·34	9. 20. 7·02	2·948	8	1			98. 0. 9·03	9·63		9	0·32	9·10	15·327	
229	θ Ursæ Majoris...	11	0·33	9. 22. 39·45	4·063	4				37. 37. 59·98			4	0·23	59·98	16·083	
230	ξ Leonis.....	2	0·54	9. 23. 44·84	3·245	1				78. 1. 49·65			1	0·95	49·65	15·632	
231	26 Ursæ Majoris..			9. 24.(20)		3				37. 16. 34·96			3	0·26	34·96	15·643	
232	27 Ursæ Majoris..			9. 28.(50)		3	2			17. 3. 41·38	41·70		5	0·24	41·51	15·907	
233	2 Sextantis.....	1	0·28	9. 30. 31·28	3·138					84. 40.							
234	ο Leonis.....	1	0·95	9. 33. 2·04	3·228	2				79. 25. 9·45			2	0·54	9·45	16·121	
235	ε Leonis.....	24	0·51	9. 37. 12·74	+3·426	6	6			65. 31. 44·08	43·32		12	0·26	43·70	16·328	
236	υ Ursæ Majoris...			9. 40.(10)		2	2			30. 14. 59·39	59·74		4	0·22	59·57	16·627	
237	φ Ursæ Majoris...			9. 41.(40)		1				35. 13. 43·56			1	0·29	43·56	16·562	
238	21 Leonis Minoris.			9. 58.(30)		4	1			54. 1. 1·44	1·05		5	0·26	1·36	+ 17·302	

214. Of about the 11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Fraction of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T.D.	T.R.	J.D.	J.R.	T. D.	T. R.	J. D.	J. R.				
239	Weisse IX. 1296..			^h 10. 0.(10)	^s	1				[°] 77. 15. 46.86	"	"	"	1	0.27	46.86	+17.376
240	Regulus	27	0.45	10. 0. 16.27	+3.203	9	6	1	1	77. 17. 31.94	31.46	32.62	33.78	17	0.33	31.92	17.366
241	B. A. C. 3485			10. 6.(10)		3				68. 4. 38.53				3	0.23	38.53	17.702
242	32 Ursæ Majoris ..	3	0.29	10. 6. 55.67	4.470					24. 8.							
243	B. A. C. 3528.			10. 12.(0)		2	2			6. 40. 20.70	22.00			4	0.28	21.35	17.939
244	24 Sextantis.			10. 15.(40)		1				90. 8. 0.28				1	0.25	0.28	18.112
245	35 Ursæ Majoris S.P.			10. 19.(0)		2				23. 35. 53.38				2	0.76	53.38	18.158
246	29 Sextantis.	4	0.31	10. 21. 45.40	3.053					91. 58.							
247	B. A. C. 3593.			10. 22.(0)		1	1			13. 30. 23.97	25.20			2	0.29	24.59	18.239
248	ρ Leonis.	1	0.29	10. 24. 48.14	3.171			1		79. 54.		46.10		1	0.37	46.10	18.390
249	B. A. C. 3652.			10. 32.(10)		1	1			20. 7. 51.16	51.50			2	0.34	51.33	18.649
250	42 Ursæ Majoris ..			10. 41.(50)		2	2			29. 52. 28.12	28.70			4	0.31	28.41	18.989
251	δ Leonis	2	0.25	10. 52. 42.51	3.104	2				85. 34. 2.82				2	0.25	2.82	19.246
252	α Ursæ Majoris ...	11	0.52	10. 54. 18.03	3.782	15	14			27. 25. 46.94	47.42			29	0.33	47.17	19.327
253	χ Leonis	1	0.21	10. 57. 10.54	3.103	2	1			81. 50. 37.35	35.16			3	0.20	36.62	19.385
254	δ Leonis	17	0.40	11. 6. 1.02	3.207	11	10	1	1	68. 38. 39.62	39.94	39.29	40.89	23	0.33	39.80	19.639
255	δ Crateris	16	0.37	11. 11. 44.66	2.995	8				103. 57. 24.32				8	0.31	24.32	19.410
256	σ Leonis	2	0.32	11. 13. 17.81	3.099	1				83. 8. 17.04				1	0.29	17.04	19.659
257	83 Leonis	3	0.30	11. 19. 3.53	3.036					86. 10.							
258	Piazzì XI. 71	3	0.32	11. 19. 4.42	3.087					86. 10.							
259	τ Leonis	4	0.29	11. 20. 7.03	3.091	3	1	2		86. 18. 26.17	26.32	26.69		6	0.27	26.37	19.780
260	Weisse XI. 349 ..	1	0.34	11. 20. 8.17	3.086					86. 20.							
261	λ Draconis			11. 22.(20)		1				19. 49. 50.26				1	0.33	50.26	19.864
262	Lalande 22026			11. 29.(30)		1				44. 26. 34.84				1	0.33	34.84	19.877
263	β Leonis	17	0.36	11. 41. 18.12	3.066	8	8	3	3	74. 34. 43.04	42.23	42.38	43.22	22	0.34	42.68	20.082
264	β Virginis.	3	0.29	11. 42. 46.67	3.128	1		1		87. 22. 45.99		41.97		2	0.25	43.98	20.279
265	{ B. A. C. 4010.. } { Groomb. 1830.. }	1	0.33	11. 44. 11.95	3.488					51. 12.							
266	{ B. A. C. 4015.. } { 28 Crateris }	2	0.34	11. 45. 14.41	3.014					123. 4.							
267	γ Ursæ Majoris ...	13	0.49	11. 45. 48.55	3.199	2				35. 27. 36.75				2	0.55	36.75	20.024
268	Lalande 22440	1	0.34	11. 47. 1.74	3.080					83. 21.							
269	Lalande 22547	1	0.33	11. 50. 54.51	3.113					51. 17.							
270	b Virginis.			11. 52.(10)		3				85. 29. 53.32				3	0.33	53.32	20.083
271	π Virginis			11. 53.(10)		3	1			82. 32. 18.74	17.59			4	0.31	18.45	20.096
272	*	1	0.33	11. 53. 43.15	3.107					46. 7.							
273	67 Ursæ Majoris ..	2	0.34	11. 54. 22.62	3.074	2	1	1	1	46. 6. 39.88	39.16	39.83	40.46	5	0.35	39.84	20.029
274	B. A. C. 4059.			11. 54.(50)		1				46. 2. 52.46				1	0.35	52.46	20.638
275	Weisse XI. 1038..	1	0.33	12. 0. 55.33	3.070					86. 3.							
276	δ Ursæ Majoris. ...			12. 7.(50)		5	4	4	4	32. 7. 20.66	21.05	21.52	19.81	17	0.35	20.75	20.103
277	2 Canum Venaticum			12. 8.(30)		1	2			48. 29. 37.40	34.72			3	0.33	35.61	20.071
278	13 Virginis.	1	0.36	12. 10. 52.80	3.075	1				89. 56. 30.64				1	0.35	30.64	20.093
279	η Virginis.			12. 12.(10)		1		1		89. 49. 17.92		18.34		2	0.36	18.13	20.066
280	κ ¹ Centauri			12. 15.(40)		1				124. 34. 8.59				1	0.34	8.59	20.178
281	κ ² Centauri			12. 17.(20)		1				124. 20. 34.99				1	0.34	34.99	20.018
282	6 Canum Venaticum			12. 18.(20)		3		2	2	50. 8. 15.08		14.94	13.99	7	0.36	14.73	20.081
283	B. A. C. 4229.	2	0.38	12. 25. 50.19	3.055					81. 29.							
284	q Virginis	3	0.38	12. 25. 56.26	3.091					98. 37.							
285	β Corvi	18	0.33	12. 26. 24.66	+3.131	7		4		112. 33. 20.43		18.56		11	0.35	19.75	+19.992

258. The R. A. of this star differs about three seconds from Piazzì. By comparison with the Catalogues of Piazzì, Weisse, and Taylor, it appears to have a proper motion, nearly the same as that of the preceding star 83 Leonis.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
286	κ Draconis			^h ^m ^s 12. 27. (0)	"			3	3	^o ['] ["] 19. 22.	"	["] ["] ["] 24. 40. 23. 91	6	0.39	["] ["] ["] 24. 16	+ 19. 956	
287	6 Draconis	2	0.40	12. 28. 16. 28	+ 2.614					19. 8.							
288	γ Virginis.....	1	0.36	12. 33. 57. 66	3.040			1		90. 36.		55. 05		1	0.36	55. 05	19. 853
289	Groombridge 1918.	3	0.35	12. 36. 22. 79	2.674	1				28. 0. 43. 30				1	0.35	43. 30	19. 802
290	*			12. 37. \pm		1				28. 3. 23. 87				1	0.35	23. 87	19. 793
291	35 Virginis.....	5	0.37	12. 40. 7. 07	3.055					85. 36.							
292	30 Comæ.....			12. 41. (50)		3				61. 37. 8. 28				3	0.34	8. 28	19. 671
293	38 Virginis.....			12. 45. (20)		3				92. 43. 34. 71				3	0.34	34. 71	19. 692
294	35 Comæ.....			12. 45. (50)				4	4	67. 55.		38. 87. 40. 32		8	0.37	39. 60	19. 094
295	ϵ Ursæ Majoris....			12. 47. (20)		2	2	6	6	33. 12. 50. 64	49. 98	51. 71. 52. 27		16	0.37	51. 57	19. 688
296	δ Virginis.....	3	0.38	12. 47. 56. 84	3.023					85. 47.							
297	12 Can. Ven. (2nd star)	8	0.37	12. 48. 54. 52	2.820			2		50. 51.		34. 68		2	0.40	34. 68	19. 546
298	B. A. C. 4355.			12. 52. (10)		1				122. 40. 47. 82				1	0.33	47. 82	19. 557
299	41 Comæ.....			12. 59. (50)				3		61. 33.		28. 96		3	0.39	28. 96	19. 465
300	g Virginis.....	2	0.37	12. 59. 56. 46	3.137					99. 56.							
301	θ Virginis.....	2	0.22	13. 2. 4. 90	3.101	2				94. 43. 33. 49				2	0.22	33. 49	19. 373
302	B. A. C. 4452.			13. 11. (10)				1	1	8. 43.		27. 07. 25. 29		3	0.26	26. 02	19. 094
	B. A. C. 4452 S. P.					1				25. 69							
303	Spica.....	44	0.47	13. 17. 11. 44	3.149	3		12		100. 21. 59. 18		58. 37		15	0.40	58. 53	18. 955
304	B. A. C. 4498 S. P.			13. 21. (0)		4				4. 27. 2. 09				4	0.71	2. 09	18. 815
305	ζ Virginis.....	1	0.14	13. 26. 57. 13	3.055	1				89. 49. 2. 11				1	0.14	2. 11	18. 569
306	81 Ursæ Majoris ..			13. 28. (20)				1	1	33. 52.		15. 54. 15. 34		2	0.36	15. 44	18. 603
307	{ B. A. C. 4548. }	2	0.39	13. 30. 10. 42	3.342					118. 47.							
	{ t Centauri																
308	25 Canum Venat. .			13. 30. (40)				9	9	52. 55.		48. 43. 47. 73		18	0.39	48. 08	18. 506
309	m Virginis.....	3	0.34	13. 33. 38. 40	3.141	1				97. 55. 58. 35				1	0.29	58. 35	18. 394
310	*(c_{24}) Lalande 25360	2	0.39	13. 37. 42. 44	2.976					80. 24.							
311	86 Virginis.....			13. 37. (50)				4		101. 39.		46. 42		4	0.40	46. 42	18. 255
312	Santini 932.....	3	0.38	13. 39. 25. 70	3.001					82. 53.							
313	τ Bootis.....			13. 40. (0)				2	1	71. 47.		0. 90. 2. 85		3	0.40	1. 55	18. 125
314	η Ursæ Majoris ...	12	0.42	13. 41. 32. 59	2.377	2		4		39. 55. 37. 08		34. 73		6	0.56	35. 51	18. 150
315	B. A. C. 4614 S. P.			13. 42. (0)		2				11. 10. 25. 57				2	0.49	25. 57	18. 031
316	k Centauri.....	1	0.41	13. 43. 4. 02	3.443					122. 14.							
317	p Virginis.....	3	0.41	13. 46. 53. 99	3.082					90. 45.							
318	η Bootis.....	24	0.49	13. 47. 26. 76	2.859			13	8	70. 50.		17. 18. 18. 02		21	0.40	17. 50	18. 235
319	94 Virginis.....	1	0.39	13. 58. 15. 32	3.167					98. 10.							
320	B. A. C. 4689.....			13. 58. (30)				3	3	20. 35.		19. 46. 19. 04		6	0.42	19. 25	17. 474
321	α Draconis			14. 0. (20)				1	1	24. 53.		46. 78. 45. 43		2	0.37	46. 11	17. 373
322	κ Virginis	4	0.33	14. 4. 47. 54	3.195			1		99. 33.		48. 37		1	0.37	48. 37	17. 145
323	B. A. C. 4720.....			14. 6. (30)				1		95. 14.		19. 07		1	0.39	19. 07	17. 057
324	B. A. C. 4725.....	1	0.39	14. 8. 0. 83	2.173					37. 30.							
325	i Virginis.....	3	0.40	14. 8. 2. 78	3.142					95. 16.							
326	Arcturus.....	26	0.62	14. 8. 43. 73	2.733	9	2	13	11	70. 1. 26. 66	24. 17	26. 17. 26. 39		35	0.53	26. 25	18. 933
327	B. A. C. 4732.....	2	0.43	14. 9. 15. 25	+ 1.110					19. 51.							
328	4 Ursæ Minoris...	2	0.42	14. 9. 31. 61	- 0.390					11. 44.							
329	λ Virginis.....	1	0.37	14. 10. 53. 53	+ 3.237			2		102. 40.		5. 72		2	0.39	5. 72	16. 843
330	ρ Bootis.....			14. 25. (20)				2		58. 57.		30. 92		2	0.44	30. 92	16. 026
331	B. A. C. 4817.....	2	0.42	14. 27. 9. 69	+ 1.439			1	1	26. 8.		29. 53. 27. 28		2	0.40	28. 41	16. 060
332	5 Ursæ Minoris...			14. 27. (50)				4	4	13. 37.		43. 10. 42. 71		8	0.43	42. 91	+ 16. 056
333	*	1	0.41	14. 28. 11. 67	+ 1.428					26. 7.							

331. This star differs nearly one second in R. A. from the B. A. C., the authority being the Catalogue of Groombridge. It is identical with Groombridge 2123.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
334	B. A. C. 4846.....			14. 33.(30)	"			1		75. 48.....	"	43. 86	"	1	0.43	43.86	+15.892
335	ζ Bootis.....			14. 33.(50)	"			2	1	75. 36.....		60.62	59.04	3	0.41	60.09	15.704
336	μ Virginis.....	3	0.42	14. 35. 3.37	+3.155			1		94. 59.....		28.18		1	0.42	28.18	15.967
337	54 Hydræ.....	2	0.43	14. 37. 12.90	3.449					114. 48.....							
338	5 Libræ.....	2	0.43	14. 37. 35.33	3.297					104. 49.....							
339	ε Bootis.....	17	0.58	14. 38. 20.87	2.622	2		8	4	62. 16. 58.06		55.10	56.61	14	0.50	55.95	15.455
340	55 Hydræ.....	2	0.44	14. 38. 32.82	3.470					114. 59.....							
341	56 Hydræ.....	2	0.43	14. 38. 53.09	3.478					115. 27.....							
342	μ Libræ.....			14. 41.(0)				1		103. 30.....		44.47		1	0.43	44.47	15.316
343	{ 58 Hydræ..... } { 6 Libræ..... }	2	0.44	14. 41. 22.45	3.503					117. 19.....							
344	8 Libræ.....			14. 42.(20)				4		105. 21.....		43.21		4	0.43	43.21	15.300
345	α Libræ.....	12	0.44	14. 42. 28.69	3.306			4		105. 24.....		23.43		4	0.43	23.43	15.254
346	39 Bootis (1st star)			14. 44.(30)				1		40. 39.....		7.58		1	0.43	7.58	15.086
347	39 Bootis (2nd star)			14. 44.(30)				1		40. 39.....		4.98		1	0.43	4.98	15.086
348	B. A. C. 4918.....	1	0.45	14. 47. 35.10	1.508					30. 5.....							
349	ζ ² Libræ.....	1	0.37	14. 48. 31.61	3.245					100. 48.....							
350	*	1	0.33	14. 48. 55.47	+3.267	1				102. 18. 33.82				1	0.33	33.82	14.850
351	β Ursæ Minoris	10	0.47	14. 51. 12.40	-0.275	3	1	8	6	15. 13. 22.42	23.75	23.92	24.28	23	0.58	23.79	14.759
	β Ursæ Minoris S. P.					5				23.82							
352	δ Libræ.....	1	0.44	14. 52. 51.39	+3.197			1		97. 54.....		44.61		1	0.40	44.61	14.626
353	b Bootis.....			15. 1.(50)				1	1	63. 6.....		49.86	47.29	2	0.45	48.58	14.047
354	B. A. C. 5019.....	2	0.46	15. 6. 30.92	1.942					40. 44.....							
355	β Libræ.....	7	0.52	15. 8. 49.94	3.220			5		98. 49.....		5.60		5	0.43	5.60	13.622
356	Lalande 27904....			15. 10.(30)				1	1	52. 22.....		8.22	9.64	2	0.47	8.93	13.518
357	B. A. C. 5058.....	2	0.48	15. 12. 55.08	0.611	1	1			22. 4. 30.93	32.22			2	0.33	31.58	13.360
358	B. A. C. 5064.....	1	0.47	15. 14. 43.66	1.859					39. 14.....							
359	μ Bootis.....	2	0.48	15. 18. 44.73	2.267					52. 5.....							
360	Piazzi XV. 74....	1	0.47	15. 18. 46.27	2.072					52. 7.....							
361	ζ ¹ Libræ.....			15. 19.(40)				3		106. 10.....		55.85		3	0.44	55.85	12.954
362	ζ ² Libræ.....	1	0.47	15. 20. 59.26	3.382					106. 55.....							
363	ι Draconis S. P....			15. 21.(30)		1				30. 30. 1.16				1	0.09	1.16	12.770
364	γ Libræ.....	1	0.47	15. 27. 1.74	3.344					104. 17.....							
365	39 Libræ.....			15. 27.(50)				1		117. 37.....		36.09		1	0.41	36.09	12.328
366	α Coronæ.....	9	0.75	15. 28. 15.16	2.538	3		2	2	62. 46. 13.87		12.59	13.91	7	0.69	13.52	12.386
367	θ Ursæ Minoris ...			15. 36.(0)				1	1	12. 8.....		50.09	48.36	2	0.43	49.23	11.788
368	α Serpentis.....	9	0.57	15. 36. 46.98	2.951			5	1	83. 5.....		32.72	34.01	6	0.49	32.94	11.664
369	B. A. C. 5240.....	1	0.47	15. 42. 50.24	3.694					119. 25.....							
370	θ Libræ.....	1	0.45	15. 45. 10.54	+3.410			1		106. 16.....		42.87		1	0.47	42.87	10.999
371	ζ Ursæ Minoris ...	5	0.45	15. 49. 36.32	-2.334	1	1	4	4	11. 44. 26.76	25.01	26.83	25.48	10	0.51	26.10	10.800
372	ε Coronæ.....			15. 51.(20)				1	1	62. 40.....		42.15	44.31	2	0.43	43.23	10.706
373	δ Scorpil.....	2	0.43	15. 51. 21.22	+3.535					112. 11.....							
374	β ¹ Scorpil.....	8	0.52	15. 56. 36.27	3.478			7		109. 23.....		4.00		7	0.50	4.00	10.302
375	β ² Scorpil.....	2	0.50	15. 56. 36.76	3.470			3		109. 22.....		53.81		3	0.51	53.81	10.372
376	ω ¹ Scorpil.....	2	0.48	15. 57. 55.32	3.502					110. 15.....							
377	ν Draconis.....			15. 59.(0)				1		31. 1.....		37.16		1	0.54	37.16	10.072
378	ν Scorpil.....	2	0.53	16. 3. 9.99	3.478			1		109. 3.....		37.37		1	0.53	37.37	9.756
379	{ B. A. C. 5392... } { 48 Serpentis... }			16. 4.(40)				1		72. 56.....		14.94		1	0.51	14.94	+ 9.611
380	14 Herculis.....	1	0.51	16. 5. 28.70	+1.942					45. 46.....							

350. Of about the 11th magnitude.

357. The R. A. of this star in the B. A. C., and in Groombridge, differs two seconds from the place here given. It is identical with Groombridge 2214. The place given in the Oxford Observations, 1842, agrees with the above observed place.

369. Of about the 7th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Fraction of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
381	δ Ophiuchi	11	0.46	16. 6. 23.01	+3.137	1		4		93. 17. 56.49	"	56.33	"	5	0.53	56.36	+ 9.647
382	Lalande 29669	2	0.49	16. 8. 3.45	1.836					43. 43.							
383	B. A. C. 5435			16. 10. (0)				1		120. 31.		57.72		1	0.51	57.72	9.350
384	σ Scorpii	1	0.51	16. 11. 57.39	3.634					115. 13.							
385	ψ Ophiuchi	1	0.53	16. 15. 12.86	3.501			1		109. 40.		35.22		1	0.53	35.22	8.913
386	Antares	8	0.51	16. 20. 5.60	3.665			3		116. 5.		20.37		3	0.53	20.37	8.474
387	{ B. A. C. 5508 . . . }	1	0.51	16. 21. 27.37	3.899					124. 22.							
	{ α Normæ }																
388	B. A. C. 5509	2	0.55	16. 21. 47.06	0.780					27. 57.							
389	η Draconis	5	0.90	16. 21. 56.45	+0.819	4	2	6	6	28. 8. 25.18	24.22	27.15	25.86	18	0.62	25.96	8.241
390	η Ursæ Minoris . . .	1	0.53	16. 22. 1.02	-1.841					13. 54.							
391	ω Ophiuchi	4	0.52	16. 23. 7.94	+3.546					111. 8.							
392	g Herculis	1	0.53	16. 23. 39.08	1.969					47. 47.							
393	B. A. C. 5573	1	0.51	16. 32. 29.83	3.461					107. 45.							
394	{ B. A. C. 5579 . . . }	2	0.45	16. 32. 47.18	3.461			2		107. 26.		34.22		2	0.45	34.22	7.418
	{ 24 Scorpii }																
395	B. A. C. 5592			16. 34. (20)		2	2			10. 42.		61.05	59.34	4	0.53	60.20	7.323
396	ζ Herculis			16. 35. (30)				1	1	58. 7.		7.43	7.41	2	0.45	7.42	6.797
397	η Herculis			16. 37. (40)		1	1			50. 47. 8.63	7.53			2	0.56	8.08	7.120
398	Weisse XVI. 739 . .	2	0.52	16. 38. 2.95	2.760					76. 6.							
399	g Draconis S. P. . .			16. 39. (50)		3				25. 7. 19.98				3	0.10	19.98	6.923
400	*			16. 40. ±				1		75. 58.		6.66		1	0.53	6.66	6.859
401	*			16. 44. (0)				1		74. 53.		38.48		1	0.51	38.48	6.530
402	*			16. 45. (10)				1		74. 45.		58.60		1	0.53	58.60	6.433
403	i Ophiuchi			16. 46. (50)		1		1		79. 34. 49.41		48.51		2	0.54	48.96	6.335
404	53 Herculis			16. 47. (10)		1	1	1		58. 2. 34.56	37.47	36.15		3	0.55	36.06	6.267
405	*	4	0.47	16. 50. 59.07	3.358			3		102. 39.		15.86		3	0.42	15.86	5.949
406	B. A. C. 5717	3	0.53	16. 51. 58.02	0.801					29. 24.							
407	h ² Draconis			16. 55. (40)				4	1	24. 43.		46.16	45.38	5	0.53	46.00	5.526
408	η Ophiuchi	3	0.35	17. 1. 39.88	+3.435			2		105. 31.		51.98		2	0.45	51.98	4.930
409	ε Ursæ Minoris . . .	7	0.48	17. 1. 44.50	-6.527	3	3	2		7. 43. 16.02	16.09	18.28		8	0.56	16.61	5.048
410	α ² Herculis	18	0.58	17. 7. 43.07	+2.732	3		7	3	75. 25. 55.84		55.96	58.34	13	0.53	56.48	4.473
411	α ² Herculis	1	0.52	17. 7. 43.33	2.732			2		75. 25.		59.11		2	0.53	59.11	4.536
412	ζ Draconis			17. 8. (20)				1	1	24. 5.		55.04	51.20	2	0.54	53.12	4.474
413	39 Ophiuchi	3	0.54	17. 8. 44.81	3.654					114. 7.							
414	ξ Ophiuchi	3	0.52	17. 11. 53.90	3.592			1		110. 56.		39.79		1	0.53	39.79	4.367
415	ν Serpentis	2	0.52	17. 12. 16.87	3.371					102. 41.							
416	Lalande 31499			17. 12. (30)		1				102. 55. 27.15				1	0.56	27.15	4.126
417	b Ophiuchi	2	0.52	17. 17. 5.23	3.660					114. 2.							
418	*(e ₄)	2	0.54	17. 17. 53.80	0.956					31. 52.							
419	{ B. A. C. 5888 . . . }			17. 18. (30)				2		102. 22.		22.01		2	0.52	22.01	3.672
	{ 47 Ophiuchi }																
420	B. A. C. 5903	3	0.52	17. 21. 4.49	3.060					89. 32.							
421	Weisse XVII. 493 . .	2	0.52	17. 26. 19.49	3.331					101. 8.							
422	*			17. 26. (50)		1		1		72. 18. 17.33		20.11		2	0.55	18.72	2.892
423	*			17. 27. (0)		1		1		72. 22. 49.16		53.10		2	0.55	51.13	2.878
424	β Draconis	6	0.60	17. 26. 59.95	1.350	3		1		37. 35. 2.38		2.63		4	0.58	2.44	2.869
425	α Ophiuchi	16	0.60	17. 27. 52.73	2.779	3		5	4	77. 19. 30.15		30.04	32.55	12	0.56	30.90	+ 2.991
426	ξ Serpentis	1	0.51	17. 28. 53.01	3.433					105. 18.							
427	26 Draconis	3	0.52	17. 33. 25.67	+0.611					28. 0.							

405. This is the star whose great variability was detected by Mr. Hind. On May 18, the Transit observer notes it as of the 6th magnitude, on May 20, of the 5.6th magnitude; and on July 5, of the 6.7th magnitude. From the effect of atmospheric dispersion, the upper part was red, the rest of a yellowish colour.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Fraction of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T.D.	T.R.	J.D.	J.R.	T.D.	T.R.	J.D.	J.R.				
428	58 Ophiuchi.....	1	0·38	17. 34. 19·36	+3·594					111. 36.	"	"	"				
429	ψ ¹ Draconis.....			17. 44.(40)		4	4	4	4	17. 46. 40·92	41·00	42·18	40·02	16	0·56	41·03	+ 1·591
430	ψ ² Draconis.....			17. 44.(40)				1		17. 46.		12·03		1	0·53	12·03	1·601
431	4 Sagittarii.....			17. 50.(30)		1				113. 47. 47·03				1	0·60	47·03	0·841
432	ν Ophiuchi.....			17. 50.(40)		2		1		99. 44. 57·95		58·66		3	0·56	58·19	0·827
433	ξ Draconis.....			17. 50.(50)				1	1	33. 6.		6·13	4·41	2	0·53	5·27	0·742
434	66 Ophiuchi.....			17. 52.(40)		2		1		85. 37. 3·78		3·34		3	0·57	3·63	0·631
435	γ Draconis.....	12	0·52	17. 53. 4·57	1·393	6		2		38. 29. 28·60		26·80		9	0·44	28·20	0·641
	γ Draconis S.P. ..					1				29·04							
436	9 Sagittarii.....	1	0·54	17. 54. 33·26	3·676					114. 21.							
437	*	2	0·53	17. 54. 37·82	3·680					114. 21 ±							
438	B. A. C. 6125.	2	0·57	17. 58. 4·63	3·587					111. 27.							
439	Weisse XVII. 1235	1	0·54	17. 58. 9·66	3·181			3		94. 45.		29·17		3	0·54	29·17	+ 0·160
440	*	1	0·61	17. 59. 27·36	1·735					45. 2.							
441	B. A. C. 6133.	1	0·54	17. 59. 31·62	3·600					111. 28.							
442	μ Sagittarii.....	13	0·55	18. 4. 40·37	+3·587	5		1		111. 5. 34·62		32·04		6	0·59	34·19	— 0·421
443	14 Sagittarii.....					1				111. 44. 54·34				1	0·59	54·34	0·412
444	15 Sagittarii.....					1				110. 46. 4·08				1	0·59	4·08	0·579
445	40 Draconis.....					1	1			10. 1. 33·33	30·18			2	0·68	31·76	1·041
446	41 Draconis.....			18. 11.(30)		1	1			10. 1. 22·14	17·89			2	0·68	20·02	1·066
447	Lalande 33779....			18. 12.(10)		1				65. 36. 54·57				1	0·57	54·57	1·137
448	105 Herculis.....			18. 13.(0)		2		1		65. 36. 48·46		45·22		3	0·58	47·38	1·137
449	38 Draconis.....			18. 17.(50)				1	1	21. 19.		7·72	5·56	2	0·53	6·64	1·479
450	δ Ursæ Minoris.....	12	0·25	18. 21. 21·40	-19·284	6	6			3. 24. 12·75	13·36			28	0·34	13·40	1·873
	δ Ursæ Minoris S.P.					8	8			14·06	13·25						
451	φ Draconis.....			18. 23.(0)		1	1			18. 44. 38·68	39·60			2	0·59	39·14	2·019
452	B. A. C. 6332.....	2	0·54	18. 27. 52·18	+3·489					107. 19.							
453	α Lyræ.....	21	0·54	18. 31. 47·43	2·031	24	15	3	1	51. 21. 17·67	17·19	15·75	17·53	43	0·54	17·37	3·070
454	26 Sagittarii.....	1	0·54	18. 32. 35·37	3·666					113. 58.							
455	*			18. 37.(50)		1				45. 9. 40·58				1	0·68	40·58	3·296
456	Lalande 34885....			18. 38.(30)		3				45. 13. 23·78				3	0·66	23·78	3·353
457	*			18. 38.(30)		3				45. 12. 59·94				3	0·66	59·94	3·353
458	β ¹ Lyræ.....	21	0·68	18. 44. 28·04	2·213	10	8			56. 48. 37·57	37·52			18	0·63	37·55	3·850
459	β ² Lyræ.....	3	0·67	18. 44. 29·89	2·213	3	1			56. 49. 16·02	18·26			4	0·67	16·58	3·869
460	ν ¹ Sagittarii.....	1	0·54	18. 44. 59·45	3·627					112. 56.							
461	σ Sagittarii.....	4	0·59	18. 45. 50·16	3·729					116. 29.							
462	ξ ² Sagittarii.....	1	0·76	18. 48. 39·42	3·583	3		2		111. 18. 4·11		1·01		5	0·61	2·87	4·227
463	θ Serpentis.....	2	0·59	18. 48. 39·74	2·982					85. 59.							
464	B. A. C. 6462.....	3	0·57	18. 48. 41·13	2·982					85. 59.							
465	Piazzi XVIII. 241	3	0·58	18. 48. 46·40	3·019					87. 43.							
466	ο Sagittarii.....	1	0·54	18. 55. 34·25	3·600			1		111. 57.		29·06		1	0·54	29·06	4·786
467	ν Draconis.....			18. 56.(10)		2	2			18. 54. 25·14	24·25			4	0·66	24·70	4·917
468	ζ Aquilæ.....	17	0·59	18. 58. 25·39	2·755	9	4	1	1	76. 21. 30·37	31·36	30·37	34·94	15	0·63	30·94	4·999
469	π Sagittarii.....	1	0·54	19. 0. 43·32	+3·575					111. 16.							
470	B. A. C. 6549.....			19. 0.(50)		1				120. 14. 37·58				1	0·72	37·58	5·261
471	B. A. C. 6563.....	3	0·61	19. 4. 16·65	-2·437					13. 10.							
472	δ Sagittarii.....			19. 8.(40)		3				109. 13. 6·68				3	0·67	6·68	5·886
473	55 Draconis.....	3	0·61	19. 9. 10·80	+0·241					24. 17.							
474	θ Lyræ.....			19. 11.(10)		1	1			52. 8. 3·98	2·85			2	0·58	3·42	6·129
475	δ Draconis.....			19. 12.(30)		2	2			22. 36. 19·88	19·22			4	0·67	19·55	— 6·310

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Fraction of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
476	B. A. C. 6616.....	3	0.66	19. 12. 42.41 ^{h m s}	+3.522					109. 31.	"	"	"				
477	ρ^1 Sagittarii.....	1	0.76	19. 12. 51.12	3.489	1				108. 7. 41.17				1	0.76	41.17	— 6.328
478	59 Draconis.....			19. 14. (40)		1	1			13. 41. 44.07	43.24			2	0.62	43.66	6.299
479	B. A. C. 6645.			19. 17. (50)		1				104. 50. 53.12				1	0.64	53.12	6.587
480	δ Aquilæ.....	15	0.64	19. 17. 49.97	3.025	7	3			87. 11. 2.03	2.17			10	0.64	2.07	6.803
481	π Draconis.....			19. 19. (50)		1	1			24. 34. 38.89	38.86			2	0.58	38.88	6.865
482	Piazzi XIX. 140..	3	0.64	19. 20. 32.93	1.577					40. 3.							
483	α Vulpeculæ.....	3	0.60	19. 22. 22.76	2.495					65. 38.							
484	B. A. C. 6693.			19. 25. (20)		1				121. 55. 58.90				1	0.72	58.90	7.295
485	ϵ^1 Sagittarii.....	1	0.76	19. 32. 0.55	3.445					106. 38.							
486	σ Draconis.....			19. 32. (40)		11	11			20. 35. 51.83	51.62			22	0.67	51.73	6.060
487	ϵ^2 Sagittarii.....	1	0.54	19. 33. 49.22	3.440					106. 28.							
488	B. A. C. 6755.	3	0.66	19. 36. 18.78	3.838					122. 16.							
489	γ Aquilæ.....	21	0.66	19. 39. 1.90	2.855	6	1			79. 45. 12.79	12.38			7	0.65	12.73	8.412
490	57 Sagittarii.....	2	0.62	19. 43. 21.63	3.498	3				109. 25. 33.38				3	0.64	33.38	8.680
491	α Aquilæ.....	28	0.61	19. 43. 21.89	2.929	12	4			81. 31. 44.74	44.78			16	0.55	44.75	9.132
492	B. A. C. 6816.	3	0.68	19. 45. 20.25	3.856					123. 26.							
493	ξ Aquilæ.....			19. 46. (50)		2				81. 55. 40.29				2	0.63	40.29	8.954
494	δ Sagittarii.....	3	0.64	10. 47. 36.73	3.696					117. 34.							
495	β Aquilæ.....	20	0.66	19. 47. 50.69	2.950	6	3			83. 58. 7.88	7.95			9	0.69	7.90	8.628
496	ϵ Draconis.....			19. 59. (50)		1	1			25. 36. 14.21	12.74			2	0.66	13.48	9.994
497	δ^2 Cygni.....			20. 3. (50)		1	1			53. 36. 18.48	16.40			2	0.65	17.44	10.426
498	18 Vulpeculæ.....	3	0.66	20. 4. 12.81	2.504					63. 33.							
499	19 Vulpeculæ.....	1	0.64	20. 5. 26.81	2.508					63. 38.							
500	α^1 Capricorni.....	5	0.73	20. 9. 13.04	3.334	8				102. 58. 25.31				8	0.71	25.31	10.737
501	α^2 Capricorni.....	10	0.67	20. 9. 36.95	3.335	9				103. 0. 41.57				9	0.71	41.57	10.759
502	σ Capricorni.....	3	0.67	20. 10. 37.08	+3.477					109. 35.							
503	λ Ursæ Minoris....	8	0.52	20. 14. 45.90	-52.743	4	4			1. 8. 42.73	43.04			12	0.53	43.30	11.116
504	λ Ursæ Minoris S. P.					2	2			44.98	43.26						
504	B. A. C. 7032.	1	0.68	20. 18. 38.51	+3.674					118. 45.							
505	B. A. C. 7033.	2	0.66	20. 18. 45.16	3.701					119. 52.							
506	*	2	0.72	20. 27. 49.90	1.268					30. 39.							
507	τ^2 Capricorni.....	3	0.69	20. 30. 46.01	3.365	2				105. 29. 3.27				2	0.71	3.27	12.232
508	B. A. C. 7147.	3	0.69	20. 32. 19.25	+3.596					116. 32.							
509	73 Draconis.....	3	0.74	20. 33. 27.19	-0.693					15. 34.							
510	α Cygni.....	8	0.67	20. 36. 14.94	+2.042	20	18			45. 15. 37.85	37.40			38	0.47	37.64	12.644
	α Cygni S. P.					1				37.75							
511	β Microscopii			20. 42. (30)		1				123. 44. 30.78				1	0.72	30.78	13.038
512	*	1	0.76	20. 47. 14.77	1.430	1				31. 16. 28.96				1	0.76	28.96	13.371
513	1 Piscis Australis..	2	0.69	20. 51. 57.13	3.705					122. 51.							
514	f^1 Cygni.....			20. 54. (40)		1	1			43. 4. 13.16	10.24			2	0.72	11.70	13.847
515	61 Cygni (1st star).	6	0.72	21. 0. 5.22	2.673	2				51. 59. 43.96				2	0.72	43.96	17.417
516	61 Cygni (2nd star)	5	0.72	21. 0. 6.60	2.673	2				51. 59. 48.11				2	0.72	48.11	17.417
517	ν Aquarii.....	1	0.71	21. 1. 18.56	3.276					101. 59.							
518	*	1	0.73	21. 1. 51.86	3.368	2				107. 34. 15.27				2	0.72	15.27	14.296
519	3 Piscis Australis..	3	0.77	21. 4. 15.73	3.577					118. 14.							
520	ζ Cygni.....	10	0.56	21. 6. 28.09	2.550	5	4			60. 23. 38.72	38.48			9	0.74	38.61	14.517
521	29 Capricorni.....	2	0.73	21. 7. 19.67	3.334					105. 48.							
522	α Cephei.....	10	0.53	21. 14. 56.68	+1.438	14	13			28. 3. 25.26	24.30			32	0.39	24.95	-15.076
	α Cephei S. P.					5				26.18							

504. The R. A. of this star differs nearly one second from the B. A. C.

518. Of about the 9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of the Year.	Mean R. A. 1842, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Fraction of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T.D.	T.R.	J.D.	J.R.	T. D.	T. R.	J. D.	J. R.				
523	5 Piscis Australis..	2	0.80	21. 19. 57.93	+3.611					121. 54.	"	"	"				
524	β Aquarii	9	0.71	21. 23. 33.11	3.168	2				96. 14. 12.43				2	0.72	12.43	-15.592
525	β Cephei	9	0.51	21. 26. 40.48	0.807	3	3			20. 6. 21.03	20.56			9	0.55	21.04	15.682
	β Cephei S.P.					3				21.79							
526	Groombridge 3492.	2	0.81	21. 27. 3.75	1.805					33. 10.							
527	Groombridge 3494.	1	0.86	21. 27. 55.15	1.809					33. 8.							
528	ξ Aquarii	1	0.77	21. 29. 39.26	3.202	1				98. 31. 55.56				1	0.77	55.56	15.882
529	*			21. 31. (0)		1				33. 9. 59.98				1	0.73	59.98	15.964
530	*			21. 31. (20)		1				33. 7. 57.57				1	0.73	57.57	15.982
531	5 Piscis Australis..			21. 35. (50)		2				123. 42. 58.69				2	0.74	58.69	16.127
532	Weisse XXI. 896.	1	0.79	21. 36. 37.87	2.944					80. 47.							
533	ϵ Pegasi	19	0.70	21. 36. 43.13	2.951	5	1			80. 49. 9.02	11.67			6	0.71	9.46	16.283
534	δ Capricorni	1	0.55	21. 38. 38.57	3.323					106. 49.							
535	*(p_1)	1	0.79	21. 42. 12.27	1.070					20. 43.							
536	*	1	0.79	21. 44. 12.45	1.096					20. 43.							
537	*	1	0.81	21. 44. 19.04	1.097					20. 44.							
538	*	1	0.76	21. 46. 34.07	1.470					24. 40.							
539	20 Pegasi			21. 53. (40)		1	1			77. 36. 20.74	20.98			2	0.70	20.86	17.085
540	13 Piscis Australis.			21. 55. (40)		1				120. 38. 58.26				1	0.76	58.26	17.196
541	*			21. 55. (50)		1				35. 6. 31.55				1	0.78	31.55	17.183
542	*			21. 56. \pm		1				35. 8. 38.87				1	0.78	38.87	17.191
543	α Aquarii	24	0.74	21. 57. 58.47	3.083	5				91. 3. 21.80				5	0.79	21.80	17.287
544	ξ^1 Cephei			21. 59. (20)		1	1			26. 6. 42.55	41.36			2	0.63	41.96	17.419
545	ξ^2 Cephei			21. 59. (20)		1	1			26. 6. 40.80	41.53			2	0.77	41.17	17.419
546	*			22. 2. (40)		1				34. 50. 3.05				1	0.76	3.05	17.484
547	ζ Cephei			22. 5. (40)		4	3			32. 32. 48.35	47.23			8	0.68	48.02	17.601
	ζ Cephei S.P.					1				49.55							
548	Weisse XXII. 175.	1	0.86	22. 8. 38.34	3.208					102. 24.							
549	θ Aquarii	1	0.77	22. 8. 48.55	3.175	1				98. 32. 15.61				1	0.77	15.61	17.740
550	*			22. 9. (10)		1				102. 1. 41.16				1	0.76	41.16	17.755
551	*			22. 14. \pm		1				101. 36. 42.37				1	0.63	42.37	17.948
552	B. A. C. 7810.			22. 17. (10)		3	3			24. 3. 36.85	36.87			6	0.82	36.86	18.069
553	*	1	0.80	22. 19. 8.26	2.314					36. 58.							
554	Groombridge 3772.	4	0.79	22. 19. 59.68	2.317					36. 50.							
555	σ Aquarii	3	0.67	22. 22. 35.92	3.184					101. 27.							
556	*	1	0.81	22. 22. 52.35	2.340					36. 58.							
557	B. A. C. 7897.			22. 32. (10)		1				100. 9. 5.10				1	0.83	5.10	18.489
558	ζ Pegasi	24	0.73	22. 33. 52.88	2.990	13	10	1		79. 57. 38.13	38.91	38.84		24	0.76	38.48	18.676
559	*			22. 34. (50)		1				61. 29. 3.29				1	0.76	3.29	18.686
560	*			22. 37. (0)		2				61. 31. 4.40				2	0.80	4.40	18.753
561	τ^2 Aquarii	3	0.78	22. 41. 32.33	3.187	3				104. 23. 35.52				3	0.80	35.52	18.901
562	*	1	0.83	22. 41. 46.22	1.921					21. 16.							
563	γ Piscis Australis..	3	0.80	22. 44. 3.69	3.361					123. 41.							
564	ι Cephei			22. 44. (20)		1	1			24. 35. 52.23	53.67			2	0.70	52.95	18.851
565	λ Aquarii	3	0.75	22. 44. 40.76	3.133					98. 23.							
566	δ Aquarii			22. 46. (30)		3				106. 37. 39.96				3	0.77	39.96	19.052
567	δ Piscis Australis..	3	0.77	22. 47. 30.87	3.348					123. 21.							
568	Fomalhaut	16	0.76	22. 49. 14.33	3.335	14				120. 25. 35.72				14	0.79	35.72	18.957
569	α Pegasi	23	0.77	22. 57. 11.51	2.983	14	11			75. 36. 41.52	41.98			25	0.81	41.72	-19.303
570	*(i_1)	2	0.79	23. 5. 20.09	+3.065					89. 8.							

535. Of the 8th magnitude.

536. Of about the 9th magnitude.

541. Of about the 11th magnitude.

542. Of the 8.9th magnitude.

556. Of the 10.11th magnitude.

570. Of about the 9.10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—concluded.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of the Year.	Mean R. A. 1848, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.				Mean N. P. D. 1848, Jan. 1.				Whole Number of Obs. of N. P. D.	Frac- tion of the Year.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	J. D.	J. R.	T. D.	T. R.	J. D.	J. R.				
571	ϕ Aquarii	2	0.77	^h 23. ^m 6. ^s 26.99	+3.114	1				96. 52. 2.73	"	"	"	1	0.77	2.73	-19.349
572	γ Sculptoris	1	0.68	23. 10. 36.16	3.260					123. 22.							
573	ψ^3 Aquarii	2	0.77	23. 11. 3.11	3.128	1				100. 26. 27.32				1	0.77	27.32	19.619
574	\circ Cephei	3	0.78	23. 12. 24.20	2.428	1	1			22. 43. 10.00	8.85			2	0.76	9.43	19.663
575	*			23. 13. (10)		2				67. 5. 26.76				2	0.72	26.76	19.637
576	4 Cassiopeiæ			23. 18. (10)		1	1			28. 33. 5.38	4.44			2	0.71	4.91	19.741
577	*			23. 23. (50)		1				42. 11. 32.11				1	0.68	32.11	19.805
578	B. A. C. 8221	5	0.82	23. 29. 46.45	3.124	5				103. 54. 8.98				5	0.90	8.98	19.900
579	ι Piscium	20	0.84	23. 32. 7.98	3.085	1				85. 11. 48.95				1	0.97	48.95	19.466
580	γ Cephei	8	0.57	23. 33. 8.86	2.386	14	13	1	1	13. 12. 56.41	56.24	57.20	59.45	35	0.68	56.56	20.079
	γ Cephei S. P.					5		1		57.25		55.94					
581	B. A. C. 8239	5	0.84	23. 33. 16.67	3.114	4				102. 31. 23.72				4	0.89	23.72	19.959
582	*(l).	2	0.81	23. 35. 17.44	2.811					29. 10.							
583	τ Cassiopeiæ					3	1			32. 11. 40.33	40.07						
	τ Cassiopeiæ S. P. .	1	0.81	23. 39. 38.91	2.890	1				38.83				5	0.81	40.04	20.036
584	Weisse XXIII. 868	1	0.89	23. 42. 17.39	3.093	1				101. 56. 51.27				1	0.89	51.27	19.996
585	*			23. 42. \pm		1				103. 49. 59.10				1	0.81	59.10	19.993
586	27 Piscium	2	0.85	23. 50. 53.40	3.072	1				94. 23. 59.16				1	0.93	59.16	19.919
587	σ Cassiopeiæ			23. 51. (20)		1	1			35. 5. 25.77	27.98			2	0.86	26.88	20.020
588	B. A. C. 8344			23. 53. (50)		1	1			29. 37. 24.79	23.90			2	0.97	24.35	20.038
589	ζ Sculptoris	3	0.73	23. 54. 31.83	3.090					120. 34.							
590	Groombridge 4206.	1	0.82	23. 54. 56.27	3.044					47. 56.							
591	Groombridge 4207.	3	0.81	23. 55. 21.35	3.047					48. 6.							
592	2 Ceti			23. 56. (0)		3				108. 10. 55.94				3	0.89	55.94	20.072
593	B. A. C. 8364			23. 57. (10)		1				32. 18. 48.15				1	0.90	48.15	20.023
594	33 Piscium	* 2	0.85	23. 57. 33.48	+3.076	1				96. 33. 29.80				1	0.93	29.80	-20.104

582. Of the 6.7th magnitude.

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS

AND

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES,

(The Right Ascensions corrected for the Errors of the Assumed Semidiameters of the Sun, the Moon, Venus, and Mars ; and the North Polar Distances corrected for the Errors of the Assumed Semidiameters of the Sun and Moon, and for the Alteration in the Moon's Tabular Parallax)

OF THE

SUN, MOON, AND PLANETS,

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC :

WITH

THE INFERRED POSITION OF THE ECLIPTIC, THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE ;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE.

1848.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN,
corrected for Refraction and Parallax: compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1848.							1848.						
Jan. 4	2. 21.66	21.78	+0.12	" "	" "	" "	July 3	2. 17.11	17.06	-0.05	31. 31.49	30.00	-1.49
6	2. 21.79	21.54	-0.25	32. 35.33	34.40	-0.93	5	2. 16.83	16.96	+0.13	31. 34.03	30.20	-3.83
15	2. 20.17	20.14	-0.03	32. 33.27	33.60	+0.33	6	2. 16.45	16.28	-0.17	31. 35.43	30.20	-5.23
18	2. 19.70	19.56	-0.14	32. 33.14	33.20	+0.06	12	2. 16.31	16.14	-0.17	31. 36.92	30.60	-6.32
27	2. 17.60	17.44	-0.16	32. 31.49	31.20	-0.29	13	2. 16.23	16.00	-0.23	31. 33.02	30.80	-2.22
28	2. 17.18	17.20	+0.02	32. 31.46	31.00	-0.46	14	2. 15.65	15.58	-0.07	31. 35.18	30.80	-4.38
				32. 27.96	30.60	+2.64	17	2. 15.29	15.44	+0.15	31. 29.96	31.20	+1.24
Feb. 1	2. 16.54	16.52	-0.02	32. 32.13	29.80	-2.33	18	2. 14.83	14.80	-0.03	31. 38.44	31.40	-7.04
2	2. 16.45	16.28	-0.17	32. 32.78	29.60	-3.18	21				31. 29.08	31.80	+2.72
11	2. 14.12	14.22	+0.10	32. 27.29	26.40	-0.89	22						
12	2. 14.17	14.00	-0.17	32. 25.77	26.20	+0.43	Aug. 7				31. 37.44	35.80	-1.64
16	2. 12.97	13.16	+0.19	32. 27.35	24.60	-2.75	10	2. 11.51	11.56	+0.05	31. 40.07	36.80	-3.27
17	2. 12.95	12.94	-0.01	32. 23.88	24.20	+0.32	18	2. 10.44	10.32	-0.12			
21	2. 12.17	12.16	-0.01	32. 26.29	22.40	-3.89	21	2. 10.20	9.90	-0.30	31. 43.89	40.80	-3.09
29	2. 10.73	10.78	+0.05	32. 19.98	18.60	-1.38	22	2. 9.64	9.76	+0.12	31. 42.16	41.20	-0.96
Mar. 4	2. 10.23	10.22	-0.01	32. 18.68	16.60	-2.08	23	2. 9.61	9.62	+0.01	31. 44.02	41.60	-2.42
8				32. 15.74	14.60	-1.14	24	2. 9.40	9.50	+0.10	31. 43.27	42.00	-1.27
11	2. 9.43	9.44	+0.01	32. 12.02	13.00	+0.98	31	2. 8.84	8.74	-0.10	31. 46.12	45.20	-0.92
20				32. 9.02	8.20	-0.82	Sep. 1				31. 49.09	45.60	-3.49
22				32. 7.65	7.00	-0.65	4	2. 8.49	8.42	-0.07	31. 49.10	47.00	-2.10
28				32. 5.85	3.80	-2.05	5	2. 8.50	8.36	-0.14	31. 50.36	47.60	-2.76
31	2. 8.73	8.82	+0.09	31. 58.21	62.00	+3.79	11	2. 8.11	8.06	-0.05	31. 53.48	50.60	-2.88
April 1	2. 8.99	8.84	-0.15	32. 4.69	1.40	-3.29	13	2. 7.95	8.02	+0.07	31. 52.44	51.60	-0.84
3	2. 9.26	8.92	-0.34	32. 3.35	0.40	-2.95	15	2. 8.07	7.98	-0.09	31. 57.32	52.60	-4.72
5	2. 8.93	9.04	+0.11	31. 59.16	59.20	+0.04	16	2. 7.77	7.98	+0.21	31. 54.23	53.20	-1.03
10				31. 59.75	56.60	-3.15	18	2. 7.91	7.98	+0.07	31. 55.40	54.20	-1.20
11	2. 9.83	9.46	-0.37	31. 58.84	56.00	-2.84	19	2. 8.01	8.00	-0.01	31. 54.79	54.80	+0.01
May 1	2. 12.24	12.00	-0.24	31. 46.01	45.80	-0.21	20				31. 53.72	55.20	+1.48
2	2. 12.18	12.16	-0.02	31. 49.98	45.40	-4.58	21	2. 8.28	8.04	-0.24	31. 56.35	55.80	-0.55
4	2. 12.61	12.48	-0.13	31. 51.99	44.40	-7.59	22	2. 8.28	8.06	-0.22	31. 59.32	56.40	-2.92
5	2. 12.83	12.64	-0.19	31. 49.11	44.00	-5.11	25	2. 8.00	8.20	+0.20	31. 60.29	58.00	-2.29
6	2. 12.90	12.80	-0.10	31. 46.46	43.60	-2.86	Oct. 2	2. 8.67	8.72	+0.05	32. 2.81	1.80	-1.01
8	2. 13.42	13.14	-0.28	31. 43.91	42.60	-1.31	3				32. 6.79	2.40	-4.39
9	2. 13.40	13.30	-0.10	31. 46.50	42.20	-4.30	6	2. 9.47	9.14	-0.33	32. 4.30	4.00	-0.30
10	2. 13.86	13.46	-0.40	31. 47.74	41.80	-5.94	7	2. 9.09	9.26	+0.17	32. 7.48	4.60	-2.88
11	2. 13.65	13.62	-0.03	31. 42.21	41.40	-0.81	25	2. 12.49	12.32	-0.17	32. 15.90	14.20	-1.70
13	2. 14.24	13.96	-0.28	31. 41.22	40.60	-0.62	31	2. 13.61	13.62	+0.01	32. 17.65	17.40	-0.25
15	2. 14.62	14.30	-0.32				Nov. 2	2. 14.31	14.08	-0.23	32. 17.32	18.40	+1.08
16	2. 14.36	14.46	+0.10	31. 42.99	39.40	-3.59	8	2. 15.40	15.50	+0.10	32. 21.42	21.20	-0.22
17	2. 14.94	14.62	-0.32	31. 49.36	39.20	-10.16	10	2. 15.97	15.98	+0.01	32. 23.82	22.20	-1.62
18	2. 14.90	14.78	-0.12	31. 39.47	38.80	-0.67	14	2. 17.07	16.94	-0.13	32. 23.11	24.00	+0.89
23	2. 15.99	15.54	-0.45	31. 46.50	37.00	-9.50	21	2. 18.73	18.54	-0.19	32. 26.17	26.60	+0.43
24				31. 39.77	36.60	-3.17	22	2. 18.56	18.76	+0.20			
25	2. 15.79	15.82	+0.03	31. 38.71	36.40	-2.31	28	2. 20.03	19.98	-0.05	32. 28.99	29.00	+0.01
26	2. 16.20	15.96	-0.24	31. 42.05	36.00	-6.05	30	2. 20.31	20.36	+0.05	32. 27.71	29.60	+1.89
29	2. 16.16	16.34	+0.18	31. 37.35	35.00	-2.35	Dec. 2	2. 20.78	20.70	-0.08	32. 31.85	30.20	-1.65
30	2. 16.39	16.46	+0.07	31. 38.04	34.80	-3.24	5	2. 21.01	21.16	+0.15	32. 33.44	31.20	-2.24
31	2. 16.47	16.58	+0.11	31. 38.56	34.40	-4.16	9	2. 21.59	21.68	+0.09	32. 33.38	32.20	-1.18
June 5	2. 17.10	17.10	0.00	31. 38.55	33.20	-5.35	11	2. 21.99	21.90	-0.09	32. 33.03	32.60	-0.43
14	2. 17.64	17.70	+0.06	31. 32.15	31.60	-0.55	13	2. 22.30	22.08	-0.22	32. 32.41	33.00	+0.59
15	2. 17.85	17.74	-0.11	31. 32.07	31.40	-0.67	18	2. 22.52	22.38	-0.14	32. 38.62	33.60	-5.02
16				31. 34.21	31.20	-3.01	21	2. 22.74	22.44	-0.30	32. 36.70	34.00	-2.70
22	2. 17.99	17.78	-0.21	31. 35.89	30.60	-5.29	22	2. 22.31	22.44	+0.13			
24	2. 17.76	17.74	-0.02	31. 32.25	30.40	-1.85	30	2. 22.09	22.16	+0.07	32. 39.52	34.60	-4.92

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON :
compared with those of the Nautical Almanac.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1848.	m s	s	s	" "	"	"	1848.	m s	s	s	" "	"	"
Feb. 16				30. 50.99	47.24	-3.75	May 18				29. 42.43	38.00	-4.43
17				30. 37.70	30.88	-6.82							
18	2. 7.38	7.02	-0.36	30. 20.78	14.96	-5.82	July 15				30. 43.28	40.18	-3.10
							16				30. 68.07	59.02	-9.05
Mar. 18				29. 52.68	45.42	-7.26							
19	2. 2.21	2.28	+0.07	29. 38.87	36.12	-2.75	Sep. 12	2. 15.60	15.46	-0.14	32. 29.13	27.56	-1.57
April 17	2. 2.50	2.24	-0.26	29. 29.50	24.04	-5.46	Oct. 12				33. 20.36	14.84	-5.52
18				29. 32.21	23.22	-8.99							
19				29. 31.43	25.36	-6.07	Nov. 12				33. 19.16	11.06	-8.10

VERTICAL DIAMETER of VENUS, compared with that of the Nautical Almanac.

D A Y.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1848. Jan. 3	16.77	19.80	+ 3.03

VERTICAL DIAMETER of MARS, compared with that of the Nautical Almanac.

Jan. 4	15.17	10.40	- 4.77
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SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1848.	s	s	s	"	"	"	1848.	s	s	s	"	"	"
Jan. 15	3.52	3.42	-0.10	42.70	43.60	+0.90	Mar. 1	2.92	3.08	+0.16	40.36	39.60	-0.76
26	3.22	3.38	+0.16	43.18	43.00	-0.18	4	2.92	3.06	+0.14	38.44	39.40	+0.96
							11	2.87	3.00	+0.13	39.35	38.40	-0.95
Feb. 1	3.20	3.34	+0.14	44.08	42.60	-1.48	14	2.67	2.96	+0.29	40.46	38.00	-2.46
2	3.35	3.32	-0.03	43.39	42.40	-0.99	18	2.89	2.92	+0.03	39.24	37.40	-1.84
3	3.35	3.32	-0.03	44.30	42.40	-0.90	20	2.69	2.90	+0.21	39.35	37.20	-2.15
9	3.05	3.28	+0.23	44.62	42.00	-2.62	23	2.79	2.88	+0.09	38.44	37.00	-1.44
11	3.04	3.26	+0.22	42.43	41.80	-0.63							
16	3.09	3.22	+0.13	43.29	41.20	-2.09	Oct. 29	2.31	2.52	+0.21	35.51	34.00	-1.51
17	3.04	3.22	+0.18	44.51	41.00	-3.51							
18	3.07	3.22	+0.15	42.75	41.00	-1.75	Nov. 1	2.51	2.54	+0.03	35.25	34.20	-1.05
19	3.17	3.20	+0.03	41.63	40.80	-0.83	7	2.54	2.58	+0.04	36.52	34.80	-1.72
22	3.04	3.18	+0.14	42.70	40.60	-2.10	8	2.68	2.58	-0.10	36.47	34.80	-1.67
28	2.87	3.12	+0.25	40.62	39.80	-0.82	9	2.61	2.60	-0.01	36.84	35.00	-1.84

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER; and VERTICAL DIAMETERS—*continued*.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Naut. Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1848.	s	s	s	"	"	"	1848.	s	s	s	"	"	"
Nov. 15	2.83	2.64	-0.19	39.83	35.60	-4.23	Dec. 8				42.40	38.20	-4.20
17	2.62	2.66	+0.04	36.63	35.80	-0.83	10	3.16	2.84	-0.32	40.57	38.40	-2.17
20	2.70	2.68	-0.02	36.84	36.20	-0.64	13	2.97	2.86	-0.11	42.17	38.80	-3.37
29	2.66	2.78	+0.12	38.76	37.20	-1.56	20	2.86	2.92	+0.06	40.94	39.60	-1.34
Dec. 1	2.89	2.78	-0.11	38.97	37.40	-1.57	21	2.86	2.94	+0.08	43.29	39.60	-3.69
5	2.81	2.80	-0.01	40.09	37.80	-2.29	22	3.04	2.94	-0.10	43.23	39.60	-3.63

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN; and VERTICAL DIAMETERS of SATURN:
compared with those of the Nautical Almanac.

Aug. 2	1.19	1.22	+0.03	18.26	17.00	-1.26	Oct. 19	1.24	1.24	0.00	19.01	17.00	-2.01
7	1.66	1.22	-0.44	19.54	17.00	-2.54	21	1.26	1.24	-0.02	20.23	17.00	-3.23
9	1.28	1.22	-0.06	18.53	17.00	-1.53	25	1.18	1.24	+0.06	18.85	17.00	-1.85
19	1.23	1.24	+0.01	17.68	17.20	-0.48	27	1.13	1.24	+0.11	19.86	17.00	-2.86
22	1.31	1.24	-0.07	19.86	17.40	-2.46	28	1.14	1.22	+0.08	18.10	16.80	-1.30
30	1.24	1.24	0.00	19.01	17.40	-1.61	30	1.10	1.22	+0.12	18.48	16.80	-1.68
Sep. 1	1.64	1.24	-0.40	20.87	17.40	-3.47	Nov. 3	1.16	1.22	+0.06	17.14	16.80	-0.34
4	1.31	1.24	-0.07				4	1.17	1.22	+0.05	16.82	16.80	-0.02
6	1.17	1.24	+0.07	20.34	17.40	-2.94	9	1.11	1.20	+0.09	18.10	16.60	-1.50
11	1.21	1.24	+0.03	21.30	17.40	-3.90	10	1.16	1.20	+0.04	17.68	16.60	-1.08
12	1.04	1.24	+0.20	18.63	17.40	-1.23	13	1.02	1.18	+0.16	17.94	16.60	-1.34
14	1.14	1.24	+0.10	17.57	17.40	-0.17	15	1.03	1.18	+0.15	15.44	16.60	+1.16
15	1.20	1.24	+0.04	21.30	17.40	-3.90	18	0.97	1.18	+0.21	16.66	16.60	-0.06
18	1.18	1.24	+0.06	19.17	17.40	-1.77	21	1.19	1.18	-0.01	18.63	16.40	-2.23
19	1.19	1.24	+0.05	21.03	17.40	-3.63	24	1.13	1.18	+0.05	18.53	16.40	-2.13
20	1.22	1.24	+0.02	19.27	17.40	-1.87	Dec. 2	1.49	1.16	-0.33	18.21	16.00	-2.21
22	1.31	1.24	-0.07	18.90	17.40	-1.50	4	1.26	1.16	-0.10	18.85	16.00	-2.85
Oct. 5	1.11	1.24	+0.13	20.13	17.40	-2.73	5	1.22	1.16	-0.06	18.74	16.00	-2.74
6	1.67	1.24	-0.43	18.69	17.40	-1.29	12	0.99	1.14	+0.15	16.72	15.80	-0.92
9	1.09	1.24	+0.15	20.50	17.20	-3.30	15	1.21	1.14	-0.07	18.05	15.80	-2.25
10	1.17	1.24	+0.07	20.82	17.20	-3.62	21	1.14	1.14	0.00	17.25	15.60	-1.65
14	1.11	1.24	+0.13	24.65	17.20	-7.45	22	1.24	1.14	-0.10	17.04	15.60	-1.44

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

Mean Solar Time of Observation.				R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d	h	m	s	h	m	s	"	"
Jan. 4.	0.	5.	0.6	18.57.57.21	57.02	-0.19	112.47.16.83	15.20	-1.63
6.	0.	5.55.0		19.6.44.82	44.63	-0.19	112.34.11.60	9.70	-1.90
15.	0.	9.33.1		19.45.52.72	52.67	-0.05	111.13.38.68	38.50	-0.18
18.	0.	10.34.3		19.58.43.63	43.72	+0.09	110.39.18.01	18.80	+0.79
27.	0.	12.57.8		20.36.36.41	36.40	-0.01	108.35.46.16	50.20	+4.04
28.	0.	13.9.6		20.40.44.89	45.02	+0.13	108.20.20.12	20.80	+0.68
29.	0.	13.21.2		20.44.53.02	52.85	-0.17	108.4.29.76	31.50	+1.74

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—*continued*.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
Feb.	1. 0. 13. 50.0	20. 57. 11.56	11.48	— 0.08	107. 15. 6.85	8.40	+ 1.55
	2. 0. 13. 57.9	21. 1. 16.13	16.07	— 0.06	106. 58. 2.51	3.70	+ 1.19
	11. 0. 14. 33.3	21. 37. 20.56	20.52	— 0.04	104. 11. 50.22	50.10	— 0.12
	12. 0. 14. 33.2	21. 41. 17.03	16.96	— 0.07	103. 52. 4.59	6.30	+ 1.71
	16. 0. 14. 25.0	21. 56. 54.99	54.96	— 0.03	102. 30. 59.48	59.00	— 0.48
	17. 0. 14. 20.9	22. 0. 47.46	47.58	+ 0.12	102. 10. 9.92	11.30	+ 1.38
	21. 0. 13. 57.5	22. 16. 11.28	11.07	— 0.21	100. 45. 8.10	8.80	+ 0.70
	29. 0. 12. 43.1	22. 46. 28.00	28.15	+ 0.15	97. 47. 29.17	30.20	+ 1.03
Mar.	4. 0. 11. 53.0	23. 1. 24.00	24.02	+ 0.02	96. 15. 45.66	45.20	— 0.46
	8. 0. 10. 56.2	23. 16. 12.84	12.78	— 0.06	94. 42. 36.44	37.80	+ 1.36
	11. 0. 10. 8.7	23. 27. 15.25	15.30	+ 0.05	93. 32. 7.83	8.50	+ 0.67
	20. 0. 7. 32.4	0. 0. 7.57	7.55	— 0.02	89. 59. 10.27	10.70	+ 0.43
	22. 0. 6. 55.8	0. 7. 23.92	23.87	— 0.05	89. 11. 51.92	51.30	— 0.62
	28. 0. 5. 4.6	0. 29. 11.67	11.80	+ 0.13	86. 50. 38.58	39.80	+ 1.22
	31. 0. 4. 9.6	0. 40. 6.20	6.24	+ 0.04	85. 40. 46.47	47.50	+ 1.03
Apr.	1. 0. 3. 51.6	0. 43. 44.68	44.58	— 0.10	85. 17. 39.36	38.90	— 0.46
	3. 0. 3. 15.2	0. 51. 1.33	1.65	+ 0.32	84. 31. 37.38	37.10	— 0.28
	5. 0. 2. 40.2	0. 58. 19.38	19.34	— 0.04	83. 45. 57.63	58.20	+ 0.57
	10. 0. 1. 15.2	1. 16. 36.86	37.04	+ 0.18	81. 53. 50.15	50.20	+ 0.05
	11. 0. 0. 59.1	1. 20. 17.03	17.30	+ 0.27	81. 31. 46.98	47.80	+ 0.82
	18. 23. 59. 0.3	1. 49. 50.57	50.80	+ 0.23	78. 41. 4.33	3.90	— 0.43
	30. 23. 56. 54.9	2. 35. 3.51	3.48	— 0.03	74. 48. 1.32	2.90	+ 1.58
May	1. 23. 56. 47.8	2. 38. 52.94	52.95	+ 0.01	74. 30. 8.69	7.40	— 1.29
	3. 23. 56. 35.2	2. 46. 33.42	33.53	+ 0.11	73. 55. 3.76	2.70	— 1.06
	4. 23. 56. 29.8	2. 50. 24.54	24.66	+ 0.12	73. 37. 53.06	54.10	+ 1.04
	5. 23. 56. 25.1	2. 54. 16.36	16.35	— 0.01	73. 21. 1.84	1.70	— 0.14
	7. 23. 56. 16.9	3. 2. 1.25	1.40	+ 0.15	72. 48. 7.08	7.10	+ 0.02
	8. 23. 56. 13.8	3. 5. 54.69	54.75	+ 0.06	72. 32. 7.26	5.50	— 1.76
	9. 23. 56. 11.1	3. 9. 48.48	48.66	+ 0.18	72. 16. 21.40	21.40	0.00
	10. 23. 56. 9.3	3. 13. 43.24	43.12	— 0.12	72. 0. 54.95	55.20	+ 0.25
	12. 23. 56. 6.6	3. 21. 33.72	33.74	+ 0.02	71. 30. 55.77	57.30	+ 1.53
	14. 23. 56. 6.4	3. 29. 26.56	26.59	+ 0.03	71. 2. 11.71	14.00	+ 2.29
	15. 23. 56. 7.0	3. 33. 23.71	23.85	+ 0.14	70. 48. 21.91	21.10	— 0.81
	16. 23. 56. 8.2	3. 37. 21.52	21.67	+ 0.15	70. 34. 45.10	47.60	+ 2.50
	17. 23. 56. 10.1	3. 41. 19.95	20.06	+ 0.11	70. 21. 33.24	33.90	+ 0.66
	22. 23. 56. 27.4	4. 1. 20.15	20.31	+ 0.16	69. 20. 28.65	30.00	+ 1.35
	23. 23. 56. 32.7	4. 5. 21.93	21.99	+ 0.06	69. 9. 19.75	19.80	+ 0.05
	24. 23. 56. 38.2	4. 9. 24.04	24.21	+ 0.17	68. 58. 32.68	31.10	— 1.58
	25. 23. 56. 44.4	4. 13. 26.85	26.94	+ 0.09	68. 48. 5.30	4.00	— 1.30
	28. 23. 57. 5.8	4. 25. 37.92	38.10	+ 0.18	68. 18. 57.93	54.70	— 3.23
	29. 23. 57. 14.0	4. 29. 42.70	42.76	+ 0.06	68. 9. 57.48	56.30	— 1.18
	30. 23. 57. 22.4	4. 33. 47.74	47.87	+ 0.13	68. 1. 22.26	20.70	— 1.56
June	4. 23. 58. 11.0	4. 54. 19.21	19.26	+ 0.05	67. 24. 7.37	9.20	+ 1.83
	13. 23. 59. 56.0	5. 31. 33.52	33.64	+ 0.12	66. 42. 17.52	16.70	— 0.82
	15. 0. 0. 8.7	5. 35. 42.81	42.80	— 0.01	66. 39. 41.73	39.70	— 2.03
	16. 0. 0. 21.2	5. 39. 51.89	52.06	+ 0.17	66. 37. 27.91	27.40	— 0.51
	22. 0. 1. 38.5	6. 4. 48.79	48.86	+ 0.07	66. 32. 53.42	53.80	+ 0.38
	24. 0. 2. 4.2	6. 13. 7.66	7.76	+ 0.10	66. 34. 41.87	41.10	— 0.77
	28. 0. 2. 54.2	6. 29. 43.98	44.40	(+ 0.43)			
July	3. 0. 3. 53.2	6. 50. 25.98	25.94	— 0.04	67. 3. 0.98	1.00	+ 0.02
	5. 0. 4. 14.6	6. 58. 40.55	40.56	+ 0.01	67. 13. 44.95	45.20	+ 0.25
	6. 0. 4. 24.7	7. 2. 47.22	47.35	+ 0.13	67. 19. 42.50	43.00	+ 0.50
	12. 0. 5. 17.4	7. 27. 19.43	19.46	+ 0.03	68. 3. 39.74	39.10	— 0.64

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—concluded.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
July	13. 0. 5. 24.7	7. 31. 23.30	23.22	— 0.08	68. 12. 18.70	18.40	— 0.30
	14. 0. 5. 31.5	7. 35. 26.62	26.49	— 0.13	68. 21. 22.51	20.10	— 2.41
	17. 0. 5. 48.4	7. 47. 33.24	33.31	+ 0.07	68. 50. 38.41	37.40	— 1.01
	18. 0. 5. 53.1	7. 51. 34.57	34.55	— 0.02	69. 1. 9.14	6.50	— 2.64
	21. 0. 6. 4.0	.....	...	....	69. 34. 41.69	40.70	— 0.99
	22. 0. 6. 6.6	8. 7. 34.26	34.16	— 0.10	69. 46. 34.28	33.70	— 0.58
Aug.	7. 0. 5. 27.7	9. 10. 0.15	0.27	+ 0.12	73. 39. 42.28	43.30	+ 1.02
	10. 0. 5. 3.4	9. 21. 25.46	25.39	— 0.07	74. 31. 33.10	32.00	— 1.10
	18. 0. 3. 33.1	9. 51. 27.36	27.57	+ 0.21	77. 0. 16.23	12.80	— 3.43
	21. 0. 2. 51.2	10. 2. 35.01	35.06	+ 0.05	77. 59. 30.55	31.60	+ 1.05
	22. 0. 2. 36.1	10. 6. 16.40	16.67	+ 0.27	78. 19. 40.57	41.30	+ 0.73
	23. 0. 2. 21.1	10. 9. 57.91	57.85	— 0.06	78. 40. 1.54	2.20	+ 0.66
	24. 0. 2. 6.1	10. 13. 38.58	38.62	+ 0.04	79. 0. 33.03	33.90	+ 0.87
	31. 0. 0. 4.5	10. 39. 13.37	13.44	+ 0.07	81. 28. 53.25	52.50	— 0.75
	31. 23. 59. 45.7	10. 42. 50.99	51.34	+ 0.35	81. 50. 41.09	39.10	— 1.99
Sep.	3. 23. 58. 48.3	10. 53. 43.12	43.27	+ 0.15	82. 56. 45.99	44.80	— 1.19
	4. 23. 58. 28.5	10. 57. 19.88	20.05	+ 0.17	83. 19. 1.63	0.80	— 0.83
	10. 23. 56. 25.9	11. 18. 56.25	56.37	+ 0.12	85. 34. 42.80	42.20	— 0.60
	12. 23. 55. 43.4	11. 26. 7.09	7.33	+ 0.24	86. 20. 38.10	36.20	— 1.90
	14. 23. 55. 1.4	11. 33. 17.76	18.02	+ 0.26	87. 6. 49.84	46.10	— 3.74
	15. 23. 54. 40.6	11. 36. 53.36	53.33	— 0.03	87. 29. 56.87	56.20	— 0.67
	17. 23. 53. 58.0	11. 44. 3.83	3.97	+ 0.14	88. 16. 25.52	25.10	— 0.42
	18. 23. 53. 36.8	11. 47. 39.05	39.35	+ 0.30	88. 39. 43.62	43.30	— 0.32
	19. 23. 53. 15.8	11. 51. 14.58	14.81	+ 0.23	89. 3. 2.86	3.60	+ 0.74
	20. 23. 52. 54.8	11. 54. 50.12	50.35	+ 0.23	89. 26. 28.72	25.60	— 3.12
	21. 23. 52. 34.0	11. 58. 25.79	26.01	+ 0.22	89. 49. 49.49	48.90	— 0.59
	24. 23. 51. 33.0	12. 9. 13.83	13.84	+ 0.01	91. 0. 2.40	3.80	+ 1.40
Oct.	1. 23. 49. 15.6	12. 34. 32.29	32.66	+ 0.37	93. 43. 38.84	39.80	+ 0.96
	2. 23. 48. 57.4	12. 38. 10.62	10.71	+ 0.09	94. 6. 55.04	54.60	— 0.44
	5. 23. 48. 3.7	12. 49. 6.46	6.85	+ 0.39	95. 16. 20.75	19.60	— 1.15
	6. 23. 47. 46.9	12. 52. 46.13	46.30	+ 0.17	95. 39. 21.43	20.20	— 1.23
	23. 23. 44. 16.0	.....	...	...	101. 54. 15.17	14.90	— 0.27
	24. 23. 44. 9.3	14. 0. 5.93	5.96	+ 0.03	102. 14. 58.45	59.40	+ 0.95
	27. 23. 43. 53.5	14. 11. 39.76	40.02	+ 0.26			
	30. 23. 43. 45.1	14. 23. 20.98	20.91	— 0.07	104. 15. 17.82	15.00	— 2.82
Nov.	1. 23. 43. 43.1	14. 31. 12.08	12.06	— 0.02	104. 53. 32.69	34.40	+ 1.71
	6. 23. 43. 52.2	.....	...	....	106. 25. 2.62	0.00	— 2.62
	7. 23. 43. 56.7	14. 55. 4.98	4.81	— 0.17	106. 42. 30.79	28.80	— 1.99
	8. 23. 44. 1.8	14. 59. 6.72	6.49	— 0.23	106. 59. 44.11	40.50	— 3.61
	9. 23. 44. 7.7	15. 3. 9.12	9.01	— 0.11	107. 16. 37.04	34.80	— 2.24
	13. 23. 44. 39.8	15. 19. 27.61	27.63	+ 0.02	108. 21. 11.10	9.90	— 1.20
	20. 23. 46. 9.4	15. 48. 33.25	33.16	— 0.09	110. 1. 32.63	31.90	— 0.73
	21. 23. 46. 25.5	15. 52. 46.02	45.87	— 0.15	110. 14. 28.44	27.20	— 1.24
	27. 23. 48. 18.2	16. 18. 18.32	18.35	+ 0.03	111. 23. 56.43	58.10	+ 1.67
	29. 23. 49. 1.6	16. 26. 55.00	54.90	— 0.10	111. 43. 55.99	57.00	+ 1.01
Dec.	1. 23. 49. 47.6	16. 35. 34.24	34.00	— 0.24	112. 2. 16.11	15.90	— 0.21
	4. 23. 51. 0.5	16. 48. 36.95	37.03	+ 0.08	112. 26. 32.16	31.90	— 0.26
	8. 23. 52. 45.4	17. 6. 8.41	8.23	— 0.18	112. 52. 42.04	44.00	+ 1.96
	10. 23. 53. 40.4	17. 14. 56.66	56.48	— 0.18	113. 3. 10.36	8.10	— 2.26
	12. 23. 54. 36.9	17. 23. 46.41	46.20	— 0.21	113. 11. 44.25	42.30	— 1.95
	17. 23. 57. 2.9	17. 45. 55.58	55.50	— 0.08	113. 25. 2.09	0.70	— 1.39
	20. 23. 58. 32.8	17. 59. 15.41	15.24	— 0.17	113. 27. 25.08	22.00	— 3.08
	21. 23. 59. 2.8	18. 3. 42.01	41.97	— 0.04	113. 27. 12.09	12.50	+ 0.41
	30. 0. 3. 0.6	18. 39. 13.01	13.01	0.00	113. 9. 1.63	0.30	— 1.33

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
Jan.	12. 5. 18. 40.8	0. 44. 1.62	2.12	+ 0.50	86. 3. 26.96	29.00	+ 2.04
	15. 7. 58. 45.2	3. 36. 22.06	22.73	+ 0.67	74. 44. 50.63	55.10	+ 4.47
	16. 8. 54. 32.7	4. 36. 15.18	15.73	+ 0.55	72. 38. 2.68	4.30	+ 1.62
	26. 17. 3. 36.0	13. 26. 3.90	4.27	+ 0.37	97. 6. 41.81	38.10	- 3.71
	31. 20. 57. 36.3	17. 40. 25.49	25.54	+ 0.05			
Feb.	12. 6. 50. 16.2	4. 18. 5.18	5.57	+ 0.39	73. 21. 33.62	35.40	+ 1.78
	14. 8. 40. 16.5	6. 16. 16.68	17.29	+ 0.61	71. 46. 52.34	53.30	+ 0.96
	15. 9. 33. 54.8	7. 14. 0.35	0.90	+ 0.55	72. 38. 53.30	52.30	- 1.00
	16. 10. 25. 46.4	8. 9. 57.07	57.38	+ 0.31	74. 29. 25.76	24.80	- 0.96
	17. 11. 15. 30.2	9. 3. 45.54	45.82	+ 0.28	77. 8. 10.81	8.70	- 2.11
	18. 12. 3. 4.5	9. 55. 24.03	24.32	+ 0.29	80. 22. 62.47	59.30	- 3.17
	20. 13. 32. 53.1	11. 33. 20.27	20.64	+ 0.37	87. 52. 41.21	37.00	- 4.21
	22. 14. 58. 56.2	13. 7. 30.61	31.07	+ 0.46	95. 31. 14.65	11.50	- 3.15
	27. 18. 46. 45.4	17. 15. 39.98	40.18	+ 0.20	107. 53. 24.12	25.00	+ 0.88
	28. 19. 37. 25.8	18. 10. 25.30	25.42	+ 0.12	108. 10. 20.37	26.30	+ 5.93
Mar.	11. 5. 41. 5.6	4. 59. 6.71	7.37	+ 0.66	72. 25. 5.05	5.50	+ 0.45
	14. 8. 22. 25.7	7. 52. 42.97	43.40	+ 0.43	73. 53. 45.39	42.10	- 3.29
	18. 11. 29. 34.1	11. 16. 8.34	8.79	+ 0.45	86. 29. 6.44	1.90	- 4.54
	19. 12. 12. 50.3	12. 3. 28.00	28.64	+ 0.64	90. 20. 30.41	24.30	- 6.11
	21. 13. 38. 40.9	13. 37. 25.63	26.34	+ 0.71	97. 45. 17.24	15.90	- 1.34
Apr.	10. 6. 18. 35.4	7. 34. 59.24	59.33	+ 0.09	73. 16. 43.50	42.00	- 1.50
	14. 9. 28. 12.2	11. 0. 53.46	54.07	+ 0.61	85. 15. 18.44	14.50	- 3.94
	17. 11. 36. 45.2	13. 21. 36.93	37.25	+ 0.32	96. 35. 37.60	33.20	- 4.40
	18. 12. 20. 3.0	14. 8. 58.24	58.87	+ 0.63	100. 0. 18.23	14.90	- 3.33
	19. 13. 4. 19.8	14. 57. 18.83	19.24	+ 0.41	102. 59. 42.38	41.60	- 0.78
	25. 17. 54. 55.1	20. 12. 21.24	21.98	+ 0.74	105. 26. 54.85	60.30	+ 5.45
May	6. 3. 12. 21.6	6. 10. 45.24	45.51	+ 0.27			
	7. 4. 9. 19.3	7. 11. 48.85	48.89	+ 0.04	72. 30. 47.30	45.80	- 1.50
	8. 5. 3. 11.4	8. 9. 46.34	46.44	+ 0.10	74. 22. 14.95	14.70	- 0.25
	9. 5. 53. 46.9	9. 4. 26.75	26.87	+ 0.12	77. 2. 33.73	28.40	- 5.33
	10. 6. 41. 23.7	9. 56. 7.85	8.23	+ 0.38	80. 17. 21.64	18.90	- 2.74
	11. 7. 26. 37.5	10. 45. 25.68	26.39	+ 0.71	83. 54. 27.44	23.20	- 4.24
	12. 8. 10. 12.4	11. 33. 4.27	5.07	+ 0.80	87. 43. 16.57	14.20	- 2.37
	13. 8. 52. 53.2	12. 19. 48.69	49.37	+ 0.68	91. 34. 52.53	50.00	- 2.53
	14. 9. 35. 22.5	13. 6. 21.51	22.06	+ 0.55	95. 20. 59.12	55.80	- 3.32
	15. 10. 18. 18.1	13. 53. 20.66	21.14	+ 0.48	98. 53. 28.32	26.90	- 1.42
	16. 11. 2. 11.1	14. 41. 17.46	17.68	+ 0.22	102. 4. 7.39	7.10	- 0.29
	18. 12. 34. 3.4	16. 21. 17.62	17.92	+ 0.30	106. 45. 56.63	59.80	+ 3.17
	20. 14. 11. 21.7	18. 6. 44.97	45.62	+ 0.65	108. 23. 24.00	27.90	+ 3.90
	22. 15. 51. 33.7	19. 55. 6.50	7.32	+ 0.82	106. 19. 5.87	10.80	+ 4.93
	23. 16. 41. 48.8	20. 49. 26.47	27.49	+ 1.02	103. 54. 28.81	31.80	+ 2.99
	24. 17. 32. 0.0	21. 43. 42.49	43.76	+ 1.27	100. 41. 13.67	17.80	+ 4.13
	27. 20. 5. 15.4	0. 29. 12.92	13.36	+ 0.44			
	28. 20. 59. 5.1	1. 27. 8.02	8.18	+ 0.16			
June	5. 3. 44. 33.9	8. 41. 19.26	19.80	+ 0.54	75. 35. 18.68	23.70	+ 5.02
	6. 4. 34. 53.5	9. 35. 43.74	44.10	+ 0.36	78. 41. 35.90	36.80	+ 0.90
	7. 5. 22. 11.3	10. 27. 5.83	5.98	+ 0.15	82. 16. 4.54	0.70	- 3.84
	11. 8. 15. 56.8	13. 37. 6.09	6.67	+ 0.58	97. 32. 20.58	19.80	- 0.78
	13. 9. 44. 1.2	15. 13. 18.14	18.50	+ 0.36	103. 47. 46.59	47.70	+ 1.11
	15. 11. 18. 6.7	16. 55. 32.21	32.27	+ 0.06	107. 41. 54.96	54.30	- 0.66
	21. 16. 19. 53.3	22. 21. 47.51	48.63	+ 1.12	98. 16. 23.05	22.80	- 0.25
July	5. 4. 0. 51.3	10. 55. 56.29	56.89	+ 0.60	84. 13. 41.55	46.00	+ 4.45

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of the MOON'S CENTER—*continued.*

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
	1848. d h m s	h m s	s	s	° ' "	"	"
July	6. 4. 45. 41.1	11. 44. 50.04	50.66	+ 0.62	88. 11. 24.43	26.00	+ 1.57
	11. 8. 24. 49.7	15. 44. 17.34	17.65	+ 0.31	105. 8. 59.89	60.60	+ 0.71
	12. 9. 11. 57.2	16. 35. 29.18	29.62	+ 0.44	107. 4. 5.75	7.90	+ 2.15
	13. 10. 0. 49.5	17. 28. 26.04	26.05	+ 0.01	108. 11. 16.49	18.50	+ 2.01
	15. 11. 42. 30.6	19. 18. 16.94	17.29	+ 0.35	107. 36. 49.33	52.40	+ 3.07
	16. 12. 34. 13.6	20. 14. 4.63	5.49	+ 0.86	105. 50. 32.29	29.80	- 2.49
	17. 13. 25. 47.4	21. 9. 43.47	44.42	+ 0.95	103. 8. 34.41	37.30	+ 2.89
	18. 14. 16. 54.1	22. 4. 55.09	56.17	+ 1.08	99. 39. 33.11	32.90	- 0.21
	20. 15. 58. 8.3	23. 54. 19.02	19.56	+ 0.54	91. 8. 36.23	33.70	- 2.53
	21. 16. 49. 4.0	0. 49. 19.73	20.77	+ 1.04	86. 35. 43.04	44.10	+ 1.06
Aug.	4. 4. 6. 55.3	13. 0. 17.92	18.26	+ 0.34	94. 12. 15.32	15.00	- 0.32
	5. 4. 50. 14.7	13. 47. 41.05	41.29	+ 0.24	97. 52. 13.36	13.50	+ 0.14
	9. 7. 52. 24.7	17. 6. 7.21	7.21	0.00			
	10. 8. 41. 48.9	17. 59. 36.06	36.25	+ 0.19	109. 18. 33.50	35.80	+ 2.30
	16. 13. 53. 1.5	23. 35. 18.69	19.68	+ 0.99	92. 49. 27.25	28.30	+ 1.05
	17. 14. 45. 3.4	0. 31. 25.68	26.63	+ 0.95	88. 12. 16.95	14.30	- 2.65
	18. 15. 37. 37.1	1. 28. 4.54	5.34	+ 0.80	83. 40. 26.15	24.10	- 2.05
	19. 16. 31. 6.9	2. 25. 39.69	40.62	+ 0.93	79. 31. 57.87	56.30	- 1.57
	22. 19. 18. 13.0	5. 25. 2.92	3.83	+ 0.91	72. 2. 38.34	38.00	- 0.34
Sep.	4. 4. 57. 59.6	15. 53. 43.81	43.86	+ 0.05	104. 16. 39.86	41.90	+ 2.04
	6. 6. 32. 29.5	17. 36. 22.30	22.19	- 0.11	108. 3. 36.97	43.20	+ 6.23
	8. 8. 12. 32.5	19. 24. 34.84	34.87	+ 0.03	107. 20. 21.86	33.10	+ 11.24
	9. 9. 4. 6.0	....	...	...	105. 31. 17.50	22.90	+ 5.40
	11. 10. 48. 44.9	22. 13. 2.56	2.88	+ 0.32	99. 8. 21.08	24.90	+ 3.82
	12. 11. 41. 33.9	23. 9. 56.85	57.45	+ 0.60	94. 52. 20.44	25.10	+ 4.66
	14. 13. 28. 46.6	1. 5. 19.82	20.82	+ 1.00	85. 29. 16.22	18.00	+ 1.78
	15. 14. 23. 39.9	2. 4. 18.66	19.91	+ 1.25	81. 2. 6.00	6.90	+ 0.90
	16. 15. 19. 36.8	3. 4. 21.37	22.57	+ 1.20	77. 11. 36.12	36.00	- 0.12
	17. 16. 16. 27.5	4. 5. 17.93	19.06	+ 1.13	74. 14. 58.52	58.40	- 0.12
	18. 17. 13. 41.7	5. 6. 38.08	39.16	+ 1.08	72. 24. 23.92	23.30	- 0.62
	19. 18. 10. 32.7	6. 7. 34.97	36.27	+ 1.30	71. 45. 34.57	33.20	- 1.37
	20. 19. 6. 9.8	7. 7. 17.62	19.07	+ 1.45	72. 17. 32.13	26.20	- 5.93
	21. 19. 59. 51.4	8. 5. 4.73	5.94	+ 1.21			
Oct.	3. 4. 25. 41.4	17. 15. 40.33	40.63	+ 0.30	107. 48. 4.89	0.40	- 4.49
	5. 6. 2. 46.2	19. 0. 54.11	54.53	+ 0.42	107. 51. 31.54	39.80	+ 8.26
	6. 6. 52. 39.7	19. 54. 52.42	53.00	+ 0.58	106. 30. 31.61	34.00	+ 2.39
	8. 8. 34. 27.0	21. 44. 49.49	49.82	+ 0.33	101. 3. 55.98	61.80	+ 5.82
	9. 9. 26. 20.2	22. 40. 47.81	48.01	+ 0.20	97. 8. 43.76	49.20	+ 5.44
	10. 10. 19. 7.3	23. 37. 40.08	40.33	+ 0.25	92. 39. 26.00	28.60	+ 2.60
	11. 11. 13. 7.1	0. 35. 45.32	45.76	+ 0.44	87. 52. 13.54	16.40	+ 2.86
	12. 12. 8. 38.3	1. 35. 21.77	22.75	+ 0.98	83. 7. 45.33	47.40	+ 2.07
	14. 14. 4. 37.3	3. 39. 22.95	23.90	+ 0.95	75. 18. 34.04	39.60	+ 5.56
	18. 17. 56. 8.2	7. 47. 28.17	29.29	+ 1.12	73. 11. 50.35	50.40	+ 0.05
Nov.	4. 6. 24. 18.5	21. 20. 46.53	47.15	+ 0.62	102. 42. 38.80	34.60	- 4.20
	5. 7. 14. 4.6	22. 14. 37.38	38.20	+ 0.82	99. 12. 55.68	55.50	- 0.18
	7. 8. 56. 29.5	0. 5. 12.24	12.84	+ 0.60	90. 29. 31.36	35.80	+ 4.44
	9. 10. 46. 11.9	2. 3. 5.76	6.38	+ 0.62	81. 5. 43.80	43.30	- 0.50
	10. 11. 44. 41.4	3. 5. 41.48	41.88	+ 0.40	77. 1. 16.96	15.60	- 1.36
	12. 13. 46. 48.6	5. 16. 1.38	2.06	+ 0.68	72. 0. 36.19	33.90	- 2.29
	14. 15. 46. 38.8	7. 24. 4.38	5.23	+ 0.85	72. 21. 16.60	15.20	- 1.40
	15. 16. 42. 20.1	8. 23. 51.43	52.12	+ 0.69	74. 19. 26.60	23.40	- 3.20
	17. 18. 23. 25.4	10. 13. 6.38	7.46	+ 1.08	80. 34. 52.08	47.80	- 4.28
	18. 19. 9. 42.2	11. 3. 27.34	28.27	+ 0.93	84. 21. 67.75	59.30	- 8.45
	20. 20. 37. 26.1	12. 39. 18.83	19.57	+ 0.74	92. 16. 37.12	34.20	- 2.92

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848. d h m s	h m s	s	s	° ' "	"	"
Dec. 1. 4.20. 9.2	21. 2.43.70	44.18	+ 0.48	103. 58.40.96	40.00	— 0.96
2. 5. 8.31.0	21. 55.10.00	10.48	+ 0.48	100.49.31.68	29.30	— 2.38
3. 5.57. 3.5	22.47.46.97	47.72	+ 0.75	97. 1.50.63	47.40	— 3.23
4. 6.46.17.6	23.41. 5.70	6.61	+ 0.91	92.44.43.05	40.10	— 2.95
5. 7.36.54.0	0.35.47.00	47.83	+ 0.83	88. 9.57.84	53.30	— 4.54
6. 8.29.36.5	1.32.34.69	35.61	+ 0.92	83.32.40.25	37.20	— 3.05
9. 11.24.24.0	4.39.40.59	41.22	+ 0.63	72.50.58.53	54.70	— 3.83
10.12.26.39.1	5.46. 2.48	3.18	+ 0.70	71.30.31.73	27.90	— 3.83
11.13.28.23.7	6.51.53.78	54.27	+ 0.49	71.36. 5.39	3.40	— 1.99
12.14.27.50.6	7.55.26.99	27.43	+ 0.44	73. 2. 4.13	0.50	— 3.63
13.15.23.51.4	8.55.33.55	33.91	+ 0.36	75.33.20.99	13.40	— 7.59
17.18.35.23.9	12.23.23.75	24.45	+ 0.70	90.40.56.59	51.80	— 4.79
20.20.45.24.2	14.45.35.11	35.69	+ 0.58	101.36. 8.67	10.40	+ 1.73
21.21.29.57.0	15.34.11.53	12.21	+ 0.68	104.24.51.15	50.20	— 0.95

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

May 1. 22.51.16.3	1.33.10.66	11.11	+ 0.45	82.38. 3.44	2.70	— 0.74
5. 23. 2.36.0	2. 0.18.42	18.72	+ 0.30	75.36. 8.10	12.20	+ 4.10
8. 23.12.36.9	2.22.10.58	11.00	+ 0.42	77.15.40.24	35.40	— 4.84
June 14. 1.43.59.1	7.15.53.69	54.04	+ 0.35	66. 2.22.36	22.50	+ 0.14
15. 1.45.40.4	7.21.31.85	32.02	+ 0.17	66.19.27.73	31.70	+ 3.97
22. 1.50.37.8	7.54. 5.93	6.22	+ 0.29	68.39.49.39	55.00	+ 5.61
Aug. 9. 22.48.32.0	8. 4.41.54	41.81	+ 0.27	70.22.24.32	24.10	— 0.22
Sep. 16. 0.38.45.3	....	...	...	91.43.51.05	50.30	— 0.75
Oct. 6. 1. 8.58.8	14.10.14.86	14.95	+ 0.09	105. 8.21.05	21.30	+ 0.25
Nov. 8. 23.44.52.6	14.59.57.62	56.17	— 1.45			
Dec. 4. 22.37. 5.8	15.34.30.17	30.30	+ 0.13	107.41.41.82	41.20	— 0.62
12.22.53.12.5	16.22.11.96	11.70	— 0.26	111. 0.50.32	47.90	— 2.42
20.23.13.19.9	17.13.55.09	54.93	— 0.16	113.27.10.89	11.30	+ 0.41
21.23.16. 4.1	17.20.36.35	35.45	— 0.90	113.40.36.58	38.40	+ 1.82

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS.

Jan. 3. 20.51.33.8	15.43.58.49	57.99	— 0.50	106.48.15.19	11.30	— 3.89
5. 20.52.49.7	15.53. 7.79	7.31	— 0.48	107.19.37.97	36.40	— 1.57
26.21.11.34.5	17.34.43.34	42.75	— 0.59	111.14.24.47	26.60	+ 2.13
31.21.17.11.4	18. 0. 3.93	3.34	— 0.59	111.37.44.83	49.30	+ 4.47
Feb. 9. 21.27.50.2	18.46.13.53	13.07	— 0.46	111.42.26.06	30.80	+ 4.74
27.21.48.56.8	20.18.21.35	21.20	— 0.15	109.23.12.23	19.20	+ 6.97
28.21.50. 2.6	20.23.24.01	23.83	— 0.18	109. 9.53.52	58.90	+ 5.38
Mar. 27.22.15. 0.5	22.38.49.47	49.61	+ 0.14	99.45. 8.02	12.40	+ 4.38
Apr. 2. 22.18.58.3	23. 6.27.24	27.52	+ 0.28	97. 8.18.81	18.90	+ 0.09
13.22.25.25.9	23.56.18.04	18.47	+ 0.43	92. 3.31.33	31.00	— 0.33

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS—*continued.*

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
Apr.	16. 22. 27. 5·7	0. 9. 47·70	47·88	+ 0·18	90. 38. 7·58	7·30	— 0·28
	26. 22. 32. 37·5	0. 54. 45·99	46·36	+ 0·37	85. 52. 18·30	16·30	— 2·00
May	1. 22. 35. 32·4	1. 17. 24·13	24·48	+ 0·35	83. 31. 15·60	13·30	— 2·30
	3. 22. 36. 45·5	1. 26. 30·47	30·81	+ 0·34	82. 35. 39·96	36·50	— 3·46
	4. 22. 37. 22·8	1. 31. 4·46	4·77	+ 0·31	82. 8. 5·84	1·40	— 4·44
	5. 22. 38. 0·5	1. 35. 38·83	39·31	+ 0·48	81. 40. 38·70	36·10	— 2·60
	7. 22. 39. 18·1	1. 44. 49·72	50·25	+ 0·53	80. 46. 23·05	17·40	— 5·65
	8. 22. 39. 58·1	1. 49. 26·45	26·72	+ 0·27	80. 19. 29·38	25·50	— 3·88
	9. 22. 40. 38·5	1. 54. 3·50	3·89	+ 0·39	79. 52. 50·59	46·40	— 4·19
	10. 22. 41. 20·0	1. 58. 41·63	41·80	+ 0·17	79. 26. 23·10	20·50	— 2·60
	11. 22. 42. 1·8	2. 3. 20·08	20·49	+ 0·41	79. 0. 12·72	8·50	— 4·22
	12. 22. 42. 44·8	2. 7. 59·73	59·99	+ 0·26	78. 34. 14·50	11·30	— 3·20
	14. 22. 44. 12·8	2. 17. 21·14	21·49	+ 0·35	77. 43. 6·28	4·00	— 2·28
	15. 22. 44. 58·2	2. 22. 3·23	3·57	+ 0·34	77. 17. 59·84	55·20	— 4·64
	22. 22. 50. 43·3	2. 55. 25·15	25·40	+ 0·25	74. 30. 47·06	45·10	— 1·96
	24. 22. 52. 31·2	3. 5. 6·49	6·75	+ 0·26	73. 46. 16·56	11·80	— 4·76
	28. 22. 56. 20·2	3. 24. 42·39	42·80	+ 0·41	72. 21. 63·24	59·00	— 4·24
June	6. 23. 6. 1·4	4. 9. 54·13	54·62	+ 0·49	69. 39. 52·85	48·50	— 4·35
	14. 23. 15. 49·6	4. 51. 16·40	16·76	+ 0·36	67. 52. 42·64	37·30	— 5·34
	21. 23. 25. 9·1	5. 28. 13·31	13·92	+ 0·61	66. 51. 23·29	19·20	— 4·09
July	4. 23. 43. 28·4	6. 37. 50·81	51·18	+ 0·37	66. 25. 31·62	29·30	— 2·32
	5. 23. 44. 53·3	6. 43. 12·54	12·99	+ 0·45	66. 28. 24·70	23·20	— 1·50
Aug.	10. 0. 27. 2·7	9. 43. 28·43	28·28	— 0·15	74. 52. 2·19	3·20	+ 1·01
	18. 0. 33. 44·4	10. 21. 43·61	43·38	— 0·23	78. 14. 40·99	38·20	— 2·79
	21. 0. 35. 59·5	10. 35. 48·75	48·20	— 0·55	79. 36. 8·41	10·10	+ 1·69
Sep.	1. 0. 43. 16·3	11. 26. 28·84	28·74	— 0·10	84. 54. 15·00	13·10	— 1·90
	4. 0. 45. 4·2	11. 40. 6·76	6·45	— 0·31	86. 24. 40·90	42·00	+ 1·10
	5. 0. 45. 39·4	11. 44. 38·57	38·28	— 0·29	86. 55. 5·86	5·70	— 0·16
	15. 0. 51. 22·2	12. 29. 47·79	47·37	— 0·42	92. 2. 23·99	21·50	— 2·49
	16. 0. 51. 56·6	12. 34. 18·82	18·33	— 0·49	92. 33. 10·47	9·10	— 1·37
	21. 0. 54. 51·6	12. 56. 57·10	56·79	— 0·31	95. 6. 21·10	20·00	— 1·10
Oct.	2. 1. 1. 59·9	13. 47. 28·66	28·25	— 0·41	100. 32. 33·03	33·00	— 0·03
	6. 1. 4. 57·6	14. 6. 13·02	12·76	— 0·26	102. 24. 57·84	56·70	— 1·14
	31. 1. 30. 8·3	16. 10. 1·70	1·03	— 0·67	111. 49. 5·19	1·30	— 3·89
Nov.	7. 1. 39. 21·8	16. 46. 52·57	52·34	— 0·23	113. 27. 8·62	7·40	— 1·22
	9. 1. 42. 8·3				113. 49. 11·77	10·60	— 1·17
	10. 1. 43. 33·3	17. 2. 54·44	53·95	— 0·49	113. 59. 12·42	9·80	— 2·62
	14. 1. 49. 18·0	17. 24. 26·33	26·16	— 0·17	114. 32. 0·36	0·00	— 0·36
	21. 1. 59. 39·5	18. 2. 25·37	24·94	— 0·43	115. 1. 15·12	13·10	— 2·02
Dec.	9. 2. 25. 31·5	19. 39. 19·65	19·18	— 0·47	113. 28. 19·10	17·10	— 2·00
	21. 2. 39. 50·8	20. 40. 59·95	59·90	— 0·05	110. 21. 43·13	36·20	— 6·93
	22. 2. 40. 53·3	20. 45. 59·18	59·14	— 0·04	110. 2. 12·32	8·20	— 4·12

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
Jan.	4. 7. 22. 5.4	2. 16. 13.87	12.63	— 1.24	74. 52. 27.53	20.50	— 7.03
	15. 6. 54. 33.9	2. 32. 0.02	58.95	— 1.07	73. 27. 13.14	5.50	— 7.64
Feb.	1. 6. 17. 19.9	3. 1. 41.20	40.18	— 1.02	71. 8. 11.43	5.00	— 6.43
	2. 6. 15. 18.3	3. 3. 35.89	34.98	— 0.91	70. 59. 66.02	57.30	— 8.72
	3. 6. 13. 18.0	3. 5. 31.79	30.79	— 1.00	70. 51. 56.95	51.00	— 5.95
	18. 5. 45. 1.2	3. 36. 18.67	17.45	— 1.22	68. 55. 30.19	22.70	— 7.49

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FLORA.

Feb.	1. 7. 33. 36.3	....	...	...	71. 10. 46.35	43.77	— 2.58
	2. 7. 30. 44.5	4. 19. 14.48	16.97	+ 2.49	71. 4. 29.60	31.19	+ 1.59
	3. 7. 27. 37.8	4. 20. 3.75	6.01	+ 2.26	70. 58. 18.99	18.86	— 0.13

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.

Aug.	9. 15. 16. 26.7	0. 31. 21.92	23.31	+ 1.39	97. 7. 65.65	55.70	— 9.95
	19. 14. 34. 55.1	0. 29. 9.06	10.52	+ 1.46	98. 9. 60.95	48.70	— 12.25
	22. 14. 21. 54.7	0. 27. 56.12	57.68	+ 1.56	98. 30. 67.93	54.30	— 13.63
	24. 14. 13. 6.1	0. 26. 59.24	60.94	+ 1.70	98. 45. 40.64	28.60	— 12.04
	30. 13. 46. 4.1	0. 23. 32.04	33.63	+ 1.59	99. 30. 70.86	59.50	— 11.36
Sep.	1. 13. 36. 51.9	0. 22. 11.49	13.13	+ 1.64	99. 46. 42.82	32.70	— 10.12
	4. 13. 22. 54.5	0. 20. 1.43	2.95	+ 1.52	100. 9. 68.80	58.90	— 9.90
	6. 13. 13. 30.3	0. 18. 28.82	30.46	+ 1.64	100. 25. 45.00	34.10	— 10.90
	15. 12. 30. 29.0	0. 10. 49.43	51.22	+ 1.79	101. 33. 22.43	9.90	— 12.53
	18. 12. 15. 58.4	0. 8. 6.12	7.78	+ 1.66	101. 54. 9.00	0.50	— 8.50
	19. 12. 11. 7.6	0. 7. 11.05	12.73	+ 1.68	102. 0. 50.99	41.50	— 9.49
	20. 12. 6. 16.8	0. 6. 15.98	17.52	+ 1.54	102. 7. 23.47	13.60	— 9.87
	21. 12. 1. 25.4	0. 5. 20.34	22.22	+ 1.88	102. 13. 46.75	36.50	— 10.25
Oct.	5. 10. 54. 3.0	23. 52. 58.55	60.27	+ 1.72	103. 22. 58.42	52.70	— 5.72
	6. 10. 49. 19.3	23. 52. 10.71	12.40	+ 1.69	103. 26. 17.84	11.40	— 6.44
	9. 10. 35. 14.7	23. 49. 53.39	55.12	+ 1.73	103. 34. 47.87	41.10	— 6.77
	10. 10. 30. 35.5	23. 49. 10.01	11.62	+ 1.61	103. 37. 10.36	2.30	— 8.06
	21. 9. 40. 50.7	23. 42. 39.14	40.78	+ 1.64	....	...	...
	25. 9. 23. 30.0	23. 41. 1.81	3.34	+ 1.53	103. 43. 48.01	44.20	— 3.81
	27. 9. 14. 59.3	23. 40. 22.77	24.30	+ 1.53	103. 40. 47.77	42.60	— 5.17
	28. 9. 10. 46.3	23. 40. 5.73	7.25	+ 1.52	103. 38. 57.12	52.20	— 4.92
	30. 9. 2. 25.5	23. 39. 36.57	38.11	+ 1.54	103. 34. 34.84	33.00	— 1.84
Nov.	10. 8. 18. 28.5	23. 38. 54.50	55.82	+ 1.32	102. 56. 43.80	41.10	— 2.70
	21. 7. 37. 40.7	23. 41. 22.03	23.22	+ 1.19	101. 58. 21.28	17.00	— 4.28
	24. 7. 27. 4.6	....	...	...	101. 39. 22.64	20.20	— 2.44
Dec.	2. 6. 59. 42.6	23. 46. 39.80	40.90	+ 1.10	100. 43. 24.19	23.70	— 0.49
	21. 5. 59. 34.8	0. 1. 16.72	17.63	+ 0.91	98. 5. 27.98	28.70	+ 0.72
	22. 5. 56. 34.6	0. 2. 12.57	13.39	+ 0.82	....	...	...

RIGHT ASCENSION and NORTH POLAR DISTANCE of IRIS.

Dec.	21. 16. 23. 33.2	10. 26. 57.65	77.71	+ 20.06	86. 38. 41.86	184.45	+ 142.59
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of METIS.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
May	1. 12. 10. 22·9	14. 50. 32·00	32·14	+ 0·14	102. 18. 8·31	8·19	— 0·12
	4. 11. 55. 34·3	14. 47. 30·58	30·54	— 0·04	102. 10. 11·07	12·57	+ 1·50
	5. 11. 50. 38·1	14. 46. 30·13	30·08	— 0·05	102. 7. 38·99	37·21	— 1·78
	6. 11. 45. 41·9	14. 45. 29·66	29·78	+ 0·12	102. 5. 4·30	3·90	— 0·40
	8. 11. 35. 50·5	14. 43. 29·74	29·94	+ 0·20	102. 0. 2·62	4·67	+ 2·05
	9. 11. 30. 55·5	14. 42. 30·51	30·54	+ 0·03	101. 57. 41·08	39·15	— 1·93
	10. 11. 26. 0·1	14. 41. (30·87)	31·57	(+ 0·70)	101. 55. 16·00	16·73	+ 0·73

RIGHT ASCENSION of HEBE.

Dec. 21. 12. 0. 26·8	6. 3. 8·02	10·30	+ 2·28				
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RIGHT ASCENSION and NORTH POLAR DISTANCE of ASTREA.

Sep. 6. 10. 4. (20)			106. 48. 48·84			
19. 9. 6. 55·3	21. 2. 28·50			....		

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO.

Dec. 2. 12. 51. 45·4	5. 39. 40·51	55·88	+15·37	91. 8. 15·38	11·10	— 4·28	
20. 11. 25. 55·4	5. 24. 34·39	49·65	+15·26	91. 12. 34·71	39·40	+ 4·69	
21. 11. 21. 10·8	5. 23. 45·56	60·93	+15·37	91. 9. 34·56	38·90	+ 4·34	
26. 10. 57. 41·7	5. 19. 55·39	70·27	+14·88	90. 49. 40·43	46·30	+ 5·87	

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

Mar. 7. 11. 36. 54·9	10. 40. 8·09	6·78	— 1·31	92. 12. 27·87	69·60	+41·73	
21. 10. 34. 12·5	10. 32. 27·09	26·17	— 0·92	86. 17. 31·84	69·80	+37·96	
29. 10. 0. 11·8	10. 29. 53·23	52·49	— 0·74	83. 15. 47·95	85·30	+37·35	
31. 9. 51. 57·1	10. 29. 30·26	29·18	— 1·08	82. 33. 56·56	92·10	+35·54	
Apr. 1. 9. 47. 52·1	10. 29. 21·12	19·91	— 1·21	82. 13. 35·41	70·40	+34·96	
3. 9. 39. 46·5	10. 29. 7·35	6·25	— 1·10	81. 34. 4·24	38·80	+34·56	
6. 9. 27. 50·6	10. 28. 59·13	57·96	— 1·17	80. 37. 49·00	84·90	+35·90	
14. 8. 57. 12·8	10. 29. 48·74	48·00	— 0·74	78. 26. 13·40	47·20	+33·80	
19. 8. 38. 56·1	10. 31. 11·83	10·97	— 0·86	77. 17. 23·19	55·20	+32·01	

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES.

Feb. 1. 15. 32. 20·3	12. 18. 12·77	17·59	+ 4·82	75. 29. 3·70	43·70	+40·00	
Mar. 7. 12. 58. 29·7	12. 1. 56·24	62·29	+ 6·05	71. 27. 30·43	72·70	+42·27	
29. 11. 13. 33·3	11. 43. 26·80	32·77	+ 5·97	69. 57. 34·65	71·90	+37·25	
31. 11. 4. 9·7	11. 41. 54·78	60·66	+ 5·88	69. 54. 56·40	92·00	+35·60	

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES—*continued*.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
Apr.	1. 10. 59. 29.3	11. 41. 10.10	15.91	+ 5.81	69. 53. 58.94	94.60	+35.66
	3. 10. 50. 11.0	11. 39. 43.41	49.28	+ 5.87	69. 52. 51.86	85.30	+33.44
	10. 10. 18. 12.7	11. 35. 15.73	21.26	+ 5.53	69. 56. 40.67	73.70	+33.03
	14. 10. 0. 24.2	11. 33. 10.54	16.18	+ 5.64	70. 4. 9.97	41.60	+31.63
	19. 9. 38. 40.5	11. 31. 5.98	11.51	+ 5.53	70. 18. 35.92	65.10	+29.18
	26. 9. 9. 17.2	11. 29. 13.73	18.92	+ 5.19	70. 47. 25.91	53.40	+27.49
	27. 9. 5. 11.2	11. 29. 3.67	8.87	+ 5.20	70. 52. 20.01	46.20	+26.19
	29. 8. 57. 4.0	11. 28. 48.23	53.29	+ 5.06	71. 2. 39.00	63.90	+24.90
May	1. 8. 49. 2.7	11. 28. 38.72	43.77	+ 5.05	71. 13. 37.88	63.20	+25.32
	4. 8. 37. 12.0	11. 28. 35.70	40.78	+ 5.08	71. 31. 23.78	46.30	+22.52
	5. 8. 33. 18.2	11. 28. 37.80	42.77	+ 4.97	71. 37. 35.74	59.50	+23.76

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

Jan.	15. 11. 23. 57.3	7. 2. 7.66	7.60	— 0.06	67. 6. 10.37	7.40	— 2.97
	26. 10. 34. 53.6	6. 56. 17.89	17.72	— 0.17	66. 56. 31.06	31.80	+ 0.74
Feb.	1. 10. 8. 30.9	6. 53. 30.17	29.98	— 0.19	66. 52. 14.64	11.50	— 3.14
	2. 10. 4. 8.9	6. 53. 3.99	4.04	+ 0.05	66. 51. 34.42	32.10	— 2.32
	3. 9. 59. 47.8	6. 52. 38.76	38.73	— 0.03	66. 50. 57.51	53.80	— 3.71
	9. 9. 33. 55.1	6. 50. 21.20	20.96	— 0.24	66. 47. 31.49	28.30	— 3.19
	11. 9. 25. 23.1	6. 49. 40.83	40.75	— 0.08	66. 46. 29.45	28.70	— 0.75
	16. 9. 4. 16.8	6. 48. 13.84	13.60	— 0.24	66. 44. 21.41	19.30	— 2.11
	17. 9. 0. 5.9	6. 47. 58.83	58.53	— 0.30	66. 43. 58.43	56.70	— 1.73
	18. 8. 55. 55.7	6. 47. 44.49	44.26	— 0.23	66. 43. 37.14	35.20	— 1.94
	19. 8. 51. 46.3	6. 47. 30.93	30.80	— 0.13	66. 43. 17.38	14.70	— 2.68
	22. 8. 39. 23.2	6. 46. 55.47	55.30	— 0.17	66. 42. 21.92	19.80	— 2.12
	28. 8. 14. 59.3	6. 46. 6.88	6.78	— 0.10	66. 40. 60.24	57.80	— 2.44
Mar.	1. 8. 6. 58.1	6. 45. 57.53	57.37	— 0.16	66. 40. 40.61	38.60	— 2.01
	4. 7. 55. 2.8	6. 45. 49.86	49.66	— 0.20	66. 40. 19.03	17.30	— 1.73
	11. 7. 27. 43.3	6. 46. 1.79	1.53	— 0.26	66. 40. 3.43	1.70	— 1.73
	14. 7. 16. 13.3	6. 46. 19.49	19.24	— 0.25	66. 40. 12.90	9.80	— 3.10
	18. 7. 1. 4.6	6. 46. 54.54	54.35	— 0.19	66. 40. 37.03	34.10	— 2.93
	20. 6. 53. 35.1	6. 47. 16.96	16.73	— 0.23	66. 40. 54.33	52.10	— 2.23
	23. 6. 42. 26.8	6. 47. 56.44	56.21	— 0.23	66. 41. 31.54	26.50	— 5.04
Oct.	29. 18. 56. 19.4	9. 31. 11.52	11.28	— 0.24	74. 36. 33.39	29.30	— 4.09
Nov.	1. 18. 45. 50.8	9. 32. 30.82	30.47	— 0.35	74. 42. 16.12	14.10	— 2.02
	7. 18. 24. 37.1	9. 34. 52.99	52.63	— 0.36	74. 52. 31.14	27.90	— 3.24
	8. 18. 21. 2.6	9. 35. 14.42	14.15	— 0.27	74. 53. 63.25	59.90	— 3.35
	9. 18. 17. 27.7	9. 35. 35.45	35.04	— 0.41	74. 55. 31.14	28.80	— 2.34
	15. 17. 55. 43.6	9. 37. 27.16	26.71	— 0.45	75. 3. 17.87	15.40	— 2.47
	17. 17. 48. 23.3	9. 37. 58.77	58.57	— 0.20	75. 5. 28.41	24.60	— 3.81
	20. 17. 37. 18.1	9. 38. 41.40	41.17	— 0.23	75. 8. 15.93	12.30	— 3.63
	29. 17. 3. 23.6	9. 40. 10.38	10.07	— 0.31	75. 13. 23.15	20.70	— 2.45
Dec.	1. 16. 55. 43.6	9. 40. 22.18	21.70	— 0.48	75. 13. 52.41	48.40	— 4.01
	5. 16. 40. 14.0	9. 40. 36.29	35.92	— 0.37	75. 13. 61.86	58.10	— 3.76
	8. 16. 28. 28.6	.....	...	...	75. 13. 27.23	25.30	— 1.93
	10. 16. 20. 35.2	9. 40. 37.06	36.65	— 0.41	75. 12. 47.42	44.20	— 3.22
	13. 16. 8. 38.8	9. 40. 28.31	27.96	— 0.35	75. 11. 18.18	14.00	— 4.18
	20. 15. 40. 20.6	9. 39. 41.34	41.00	— 0.34	75. 5. 32.85	30.80	— 2.05
	21. 15. 36. 14.8	9. 39. 31.43	31.27	— 0.16	75. 4. 28.68	26.90	— 1.78
	22. 15. 32. 8.7	9. 39. 21.24	20.79	— 0.45	75. 3. 20.89	19.40	— 1.49

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848.	d h m s	h m s	s	s	° ' "	"	"
Aug.	2. 14. 56. 51.1	23. 44. 7.23	5.53	— 1.70	94. 13. 28.39	36.80	+ 8.41
	7. 14. 36. 21.4	23. 43. 16.94	15.04	— 1.90	94. 20. 8.64	14.70	+ 6.06
	9. 14. 28. 7.3	23. 42. 54.62	52.79	— 1.83	94. 22. 58.92	65.70	+ 6.78
	19. 13. 46. 41.6	23. 40. 47.60	45.78	— 1.82	94. 38. 41.09	48.80	+ 7.71
	22. 13. 34. 11.3	23. 40. 4.91	3.08	— 1.83	94. 43. 50.08	56.30	+ 6.22
	30. 13. 0. 42.3	23. 38. 2.79	0.96	— 1.83	94. 58. 9.74	16.20	+ 6.46
Sep.	1. 12. 52. 18.1	23. 37. 30.33	28.89	— 1.44	95. 1. 50.10	57.90	+ 7.80
	4. 12. 39. 41.8	23. 36. 41.69	39.91	— 1.78	95. 7. 26.64	33.70	+ 7.06
	6. 12. 31. 16.9	23. 36. 8.50	6.78	— 1.72	95. 11. 13.63	18.80	+ 5.17
	11. 12. 10. 13.7	23. 34. 44.50	42.78	— 1.72	95. 20. 35.88	43.30	+ 7.42
	12. 12. 6. 0.9	23. 34. 27.60	25.85	— 1.75	95. 22. 28.40	36.00	+ 7.60
	14. 11. 57. 35.2	23. 33. 53.69	51.91	— 1.78	95. 26. 12.91	20.70	+ 7.79
	15. 11. 53. 22.4	23. 33. 36.75	34.93	— 1.82	95. 28. 6.18	12.70	+ 6.52
	18. 11. 40. 43.6	23. 32. 45.53	44.04	— 1.49	95. 33. 38.17	46.10	+ 7.93
	19. 11. 36. 31.0	23. 32. 28.78	27.11	— 1.67	95. 35. 30.85	36.20	+ 5.35
	20. 11. 32. 18.2	23. 32. 11.79	10.22	— 1.57	95. 37. 19.14	25.80	+ 6.66
	22. 11. 23. 53.1	23. 31. 38.39	36.60	— 1.79	95. 40. 57.48	62.80	+ 5.32
Oct.	5. 10. 29. 17.6	23. 28. 9.13	7.58	— 1.55	96. 2. 50.83	57.40	+ 6.57
	6. 10. 25. 6.6	23. 27. 53.97	52.53	— 1.44	96. 4. 24.80	29.60	+ 4.80
	9. 10. 12. 35.2	23. 27. 10.21	8.54	— 1.67	96. 8. 50.74	56.90	+ 6.16
	10. 10. 8. 25.1	23. 26. 55.95	54.29	— 1.66	96. 10. 17.12	22.70	+ 5.58
	11. 10. 4. 15.3	23. 26. 41.80	40.25	— 1.55	....	...	...
	14. 9. 51. 46.7	23. 25. 61.08	59.51	— 1.57	96. 15. 41.03	48.70	+ 7.67
	19. 9. 31. 4.7	23. 24. 58.37	56.59	— 1.78	96. 21. 49.69	54.40	+ 4.71
	21. 9. 22. 49.5	23. 24. 34.93	33.33	— 1.60	96. 24. 1.18	6.70	+ 5.52
	25. 9. 6. 23.1	23. 23. 52.04	50.35	— 1.69	96. 28. 1.34	5.80	+ 4.46
	27. 8. 58. 11.6	23. 23. 32.31	30.73	— 1.58	96. 29. 47.21	52.00	+ 4.79
	28. 8. 54. 6.3	23. 23. 22.92	21.40	— 1.52	96. 30. 38.71	41.80	+ 3.09
	30. 8. 45. 57.0	23. 23. 5.35	3.76	— 1.59	96. 32. 8.90	14.20	+ 5.30
Nov.	3. 8. 29. 42.3	23. 22. 34.18	32.61	— 1.57	96. 34. 46.25	50.70	+ 4.45
	4. 8. 25. 39.4	23. 22. 27.23	25.70	— 1.53	96. 35. 20.20	23.80	+ 3.60
	9. 8. 5. 30.9	23. 21. 58.20	56.59	— 1.61	96. 37. 29.41	32.40	+ 2.99
	10. 8. 1. 30.3	23. 21. 53.49	51.87	— 1.62	96. 37. 46.21	50.60	+ 4.39
	13. 7. 49. 31.0	23. 21. 41.49	39.98	— 1.51	96. 38. 25.52	30.40	+ 4.88
	15. 7. 41. 32.9	23. 21. 35.53	33.96	— 1.57	96. 38. 40.25	44.20	+ 3.95
	18. 7. 29. 38.9	23. 21. 29.26	27.82	— 1.44	96. 38. 42.26	46.00	+ 3.74
	21. 7. 17. 48.6	23. 21. 26.67	25.19	— 1.48	96. 38. 21.06	24.80	+ 3.74
	24. 7. 6. 1.7	23. 21. 27.55	26.10	— 1.45	96. 37. 36.36	40.60	+ 4.24
	28. 6. 50. 23.4	....	...	...	96. 36. 0.89	5.90	+ 5.01
Dec.	2. 6. 34. 54.4	23. 21. 47.55	45.97	— 1.58	96. 33. 46.41	50.70	+ 4.29
	4. 6. 27. 11.5	23. 21. 56.46	54.88	— 1.58	96. 32. 23.52	28.20	+ 4.68
	5. 6. 23. 20.6	23. 21. 61.53	59.92	— 1.61	96. 31. 40.67	43.20	+ 2.53
	12. 5. 36. 35.0	23. 22. 47.39	45.97	— 1.42	96. 25. 14.68	20.20	+ 5.52
	15. 5. 45. 12.7	23. 23. 12.94	11.36	— 1.58	96. 21. 56.98	60.50	+ 3.52
	21. 5. 22. 37.6	23. 24. 13.42	12.04	— 1.38	96. 14. 16.93	19.50	+ 2.57
	22. 5. 18. 53.1	23. 24. 24.90	23.41	— 1.49	96. 12. 51.04	54.90	+ 3.86

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of URANUS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1848. d h m s	h m s	s	s	° ' "	"	"
Jan. 4. 5. 59. 56.7	0. 53. 51.55	60.35	+ 8.80	84. 54. 99.16	51.70	-47.46
15. 5. 17. 16.6	0. 54. 26.66	35.52	+ 8.86	84. 50. 90.85	44.10	-46.75
Aug. 24. 15. 8. 2.9	1. 22. 4.99	14.83	+ 9.84	82. 1. 96.44	47.40	-49.04
Sep. 1. 14. 35. 52.3	1. 21. 21.61	31.32	+ 9.71	82. 6. 68.06	16.80	-51.26
4. 14. 23. 45.9	1. 21. 2.87	12.66	+ 9.79	82. 8. 61.97	11.40	-50.57
6. 14. 15. 41.0	1. 20. 49.68	59.56	+ 9.88	82. 9. 84.00	31.70	-52.30
11. 13. 55. 26.7	1. 20. 14.82	24.70	+ 9.88	82. 13. 55.12	4.80	-50.32
15. 13. 39. 13.3	1. 19. 44.96	54.80	+ 9.84	82. 16. 58.48	7.00	-51.48
22. 13. 10. 45.9	1. 18. 48.78	58.75	+ 9.97	82. 21. 99.83	47.10	-52.73
Oct. 6. 12. 13. 41.5	1. 16. 46.74	56.56	+ 9.82	82. 34. 58.13	4.80	-53.33
9. 12. 1. 26.8	1. 16. 19.65	29.39	+ 9.74	82. 36. 97.74	48.30	-49.44
10. 11. 57. 21.7	1. 16. 10.47	20.30	+ 9.83	82. 37. 95.23	43.00	-52.23
21. 11. 12. 27.1	1. 14. 30.55	40.46	+ 9.91	82. 47. 91.99	41.30	-50.69
25. 10. 56. 8.0	1. 13. 55.04	64.84	+ 9.80	82. 51. 66.09	14.10	-51.99
28. 10. 43. 54.2	1. 13. 28.80	38.61	+ 9.81	82. 53. 105.30	50.40	-54.90
30. 10. 35. 45.2	1. 13. 11.62	21.42	+ 9.80	82. 55. 85.26	32.70	-52.56
Nov. 4. 10. 15. 24.1	1. 12. 29.96	39.69	+ 9.73	82. 59. 93.16	40.50	-52.66
7. 10. 3. 12.3	1. 12. 5.79	15.66	+ 9.87	83. 2. 55.51	2.80	-52.71
9. 9. 55. 5.1	1. 11. 50.35	60.11	+ 9.76	83. 3. 87.76	34.70	-53.06
10. 9. 51. 1.7	1. 11. 42.77	52.49	+ 9.72	83. 4. 72.32	19.70	-52.63
15. 9. 30. 45.6	1. 11. 6.21	16.00	+ 9.79	83. 7. 105.33	54.30	-51.03
21. 9. 6. 30.8	1. 10. 26.71	36.21	+ 9.50	83. 11. 98.60	46.50	-52.10
24. 8. 54. 25.1	1. 10. 8.73	18.15	+ 9.42	83. 13. 83.05	31.20	-51.85
Dec. 2. 8. 22. 16.9	1. 9. 27.08	36.64	+ 9.56	83. 17. 80.24	29.00	-51.24
4. 8. 14. 15.6	1. 9. 18.21	27.87	+ 9.66	83. 18. 70.10	18.40	-51.70
21. 7. 6. 39.5	1. 8. 32.49	41.76	+ 9.27	83. 22. 73.22	21.80	-51.42
22. 7. 2. 42.6	1. 8. 31.46	40.71	+ 9.25	83. 22. 76.53	25.90	-50.63
23. 6. 58. 45.7	1. 8. 30.52	39.85	+ 9.33	83. 22. 79.76	28.80	-50.96

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE.

July 15. 14. 41. 19.9	22. 17. 35.41	36.29	+ 0.98	101. 19. 6.57	2.00	- 4.57
18. 14. 29. 18.3	22. 17. 21.51	22.53	+ 1.02	101. 20. 30.55	24.50	- 6.05
Aug. 7. 13. 8. 52.8	22. 15. 33.93	35.04	+ 1.11	101. 30. 61.95	57.50	- 4.45
9. 13. 0. 49.1	22. 15. 22.03	23.16	+ 1.13	101. 32. 12.15	6.50	- 5.65
19. 12. 20. 29.2	22. 14. 21.05	22.05	+ 1.00	101. 37. 65.77	58.80	- 6.97
22. 12. 8. 22.8	22. 14. 2.28	3.38	+ 1.10	101. 39. 53.31	45.70	- 7.61
24. 12. 0. 18.3	22. 13. 49.69	50.91	+ 1.22	101. 40. 63.85	56.90	- 6.95
30. 11. 36. 5.7	22. 13. 12.37	13.55	+ 1.18	101. 44. 37.20	29.50	- 7.70
Sep. 1. 11. 28. 1.4	22. 12. 59.81	61.18	+ 1.37	101. 45. 50.05	39.50	-10.55
4. 11. 15. 55.4	22. 12. 41.46	42.81	+ 1.35	101. 47. 31.87	23.30	- 8.57
6. 11. 7. 51.5	22. 12. 29.36	30.68	+ 1.32	101. 48. 38.48	31.80	- 6.68
15. 10. 31. 35.6	22. 11. 36.50	37.94	+ 1.44	101. 53. 37.45	27.40	-10.05
18. 10. 19. 31.1	22. 11. 19.69	21.21	+ 1.52	101. 55. 7.37	0.70	- 6.67
19. 10. 15. 29.8	22. 11. 14.22	15.75	+ 1.53	101. 55. 39.82	31.00	- 8.82
20. 10. 11. 28.5	22. 11. 8.79	10.35	+ 1.56	101. 56. 9.16	1.00	- 8.16
21. 10. 7. 27.2	22. 11. 3.44	5.01	+ 1.57	101. 56. 41.30	30.70	-10.60
22. 10. 3. 26.0	22. 10. 58.12	59.72	+ 1.60	101. 56. 66.67	59.90	- 6.77

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE—*continued*.

	Mean Solar Time of Observation.				R. A. from Observation.			Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.			Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.						
	1848.	d	h	m	s	h	m	s	s		°	'	"	"	"					
Oct.	5.	9.	11.	17	7	22.	9.	56	46	57.98	+	1	52	102.	2.	48	96	39.50	—	9.46
	6.	9.	7.	17	5	22.	9.	52	14	53.83	+	1	69	102.	3.	12	41	2.10	—	10.31
	9.	8.	55.	18	0	22.	9.	40	28	41.94	+	1	66	102.	4.	18	82	6.70	—	12.12
	10.	8.	51.	18	3	22.	9.	36	48	38.18	+	1	70	102.	4.	34	69	27.20	—	7.49
	14.	8.	35.	20	7	22.	9.	22	49	24.12	+	1	63	102.	5.	53	13	43.00	—	10.13
	19.	8.	15.	26	0	22.	9.	7	31	8.94	+	1	63	102.	7.	14	99	4.10	—	10.89
	21.	8.	7.	28	9	22.	9.	1	98	3.66	+	1	68	102.	7.	43	16	32.10	—	11.06
	27.	7.	43.	40	3	22.	8.	48	77	50.59	+	1	82	102.	8.	49	55	40.50	—	9.05
	30.	7.	31.	47	8	22.	8.	44	00	45.68	+	1	68	102.	9.	15	16	5.40	—	9.76
Nov.	9.	6.	52.	20	7	22.	8.	35	90	37.56	+	1	66	102.	9.	53	51	42.80	—	10.71
	10.	6.	48.	24	6	22.	8.	35	72	37.45	+	1	73	102.	9.	51	62	42.50	—	9.12
	21.	6.	5.	17	1	22.	8.	43	19	44.88	+	1	69	102.	8.	63	94	53.10	—	10.84
	24.	5.	53.	34	1	22.	8.	47	98	49.65	+	1	67	102.	8.	33	88	24.20	—	9.68

INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.		Mean Day, 1848.	Error in R. A.	Number of Obs.	Error in N. P. D.	Number of Obs.	Error in Ecliptic N.P.D.
			s		"		"
Jan.	4 to Jan. 28	Jan. 18	— 0.06	7	+ 0.51	7	+ 0.334
Jan.	29 to Feb. 29	Feb. 14	— 0.03	8	+ 0.87	8	+ 0.673
Mar.	4 to Mar. 28	Mar. 16	+ 0.01	6	+ 0.43	6	+ 0.455
Mar.	31 to Apr. 18	Apr. 7	+ 0.13	7	+ 0.19	7	+ 0.913
Apr.	30 to May 30	May 15	+ 0.08	21	— 0.13	21	+ 0.151
June	4 to June 28	June 16	+ 0.08	6	— 0.32	6	— 0.282
July	3 to July 22	July 13	— 0.01	9	— 0.78	10	— 0.750
Aug.	7 to Aug. 31	Aug. 21	+ 0.11	9	— 0.33	9	— 0.869
Sep.	3 to Sep. 24	Sep. 16	+ 0.17	12	— 0.94	12	— 1.874
Oct.	1 to Oct. 30	Oct. 14	+ 0.18	7	— 0.57	7	— 1.529
Nov.	1 to Nov. 27	Nov. 14	— 0.09	8	— 1.14	9	— 0.772
Nov.	29 to Dec. 30	Dec. 13	— 0.11	10	— 0.71	10	— 0.614

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,

$$x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z,$$

and altering the number of observations so as to make the assumed weights of opposite quarters of the year equal :

$$\begin{array}{l} \text{Spring} \dots\dots\dots \left\{ \begin{array}{l} + 0.334 = + 0.4633 x - 0.8862 y + z \text{ Weight } 9 \\ + 0.673 = + 0.8190 x - 0.5738 y + z \text{ ,, } 9 \\ + 0.455 = + 0.9976 x - 0.0689 y + z \text{ ,, } 8 \end{array} \right. \\ \\ \text{Summer} \dots\dots\dots \left\{ \begin{array}{l} + 0.913 = + 0.9521 x + 0.3057 y + z \text{ ,, } 6 \\ + 0.151 = + 0.5776 x + 0.8163 y + z \text{ ,, } 18 \\ - 0.282 = + 0.0805 x + 0.9968 y + z \text{ ,, } 6 \end{array} \right. \\ \\ \text{Autumn} \dots\dots\dots \left\{ \begin{array}{l} - 0.750 = - 0.3605 x + 0.9327 y + z \text{ ,, } 8 \\ - 0.869 = - 0.8525 x + 0.5228 y + z \text{ ,, } 8 \\ - 1.874 = - 0.9940 x + 0.1095 y + z \text{ ,, } 10 \end{array} \right. \\ \\ \text{Winter} \dots\dots\dots \left\{ \begin{array}{l} - 1.529 = - 0.9319 x - 0.3627 y + z \text{ ,, } 9 \\ - 0.772 = - 0.6118 x - 0.7911 y + z \text{ ,, } 10 \\ - 0.614 = - 0.1446 x - 0.9895 y + z \text{ ,, } 11 \end{array} \right. \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1848.

Equations multiplied by the Weights.

$$\begin{array}{l} \text{Spring} \dots\dots\dots \left\{ \begin{array}{l} + 3.006 = + 4.1697 x - 7.9758 y + 9 z \\ + 6.057 = + 7.3710 x - 5.1642 y + 9 z \\ + 3.640 = + 7.9808 x - 0.5512 y + 8 z \end{array} \right. \\ \\ \text{Summer} \dots\dots\dots \left\{ \begin{array}{l} + 5.478 = + 5.7126 x + 1.8342 y + 6 z \\ + 2.718 = + 10.3968 x + 14.6934 y + 18 z \\ - 1.692 = + 0.4830 x + 5.9808 y + 6 z \end{array} \right. \\ \\ \text{Autumn} \dots\dots\dots \left\{ \begin{array}{l} - 6.000 = - 2.8840 x + 7.4616 y + 8 z \\ - 6.952 = - 6.8200 x + 4.1824 y + 8 z \\ - 18.740 = - 9.9400 x + 1.0950 y + 10 z \end{array} \right. \\ \\ \text{Winter} \dots\dots\dots \left\{ \begin{array}{l} - 13.761 = - 8.3871 x - 3.2643 y + 9 z \\ - 7.720 = - 6.1180 x - 7.9110 y + 10 z \\ - 6.754 = - 1.5906 x - 10.8845 y + 11 z \end{array} \right. \end{array}$$

New Equations formed by adding and subtracting the above, as indicated below

$$\begin{array}{l} \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\ - 40.720 = + 0.3742 x - 0.5036 y + 112 z \\ \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\ + 79.134 = + 71.8536 x + 18.1380 y \\ \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\ + 9.656 = + 6.4774 x - 70.9984 y \end{array}$$

Solution of these equations :

$$\begin{array}{l} x = + 1.110 \\ y = - 0.035 \\ z = - 0.367 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic North Polar Distance is positive, or, the assumed Ecliptic is south of the Sun's true path, by $1''.110$; and therefore that the right ascensions of all stars ought to be increased by $\frac{1''.110}{15 \times \sin 23^\circ.28'} = 0''.186$.

The second term denotes that the obliquity assumed in the Nautical Almanac ought to be diminished by $0''.035$.

The third term denotes that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $0''.734$.

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES of the SUN and PLANETS.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1848.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 4 to Jan. 28	7	7	January 18	— 0.06	+ 0.51	— 0.93	+ 0.33
Jan. 29 to Feb. 29	8	8	February 14	— 0.03	+ 0.87	— 0.70	+ 0.67
Mar. 4 to Mar. 28	6	6	March 16	+ 0.01	+ 0.43	— 0.03	+ 0.46
Mar. 31 to April 18	7	7	April 7	+ 0.13	+ 0.19	+ 1.72	+ 0.91
April 30 to May 30	21	21	May 15	+ 0.08	— 0.13	+ 1.13	+ 0.15
June 4 to June 28	6	6	June 16	+ 0.08	— 0.32	+ 1.11	— 0.28
July 3 to July 22	9	10	July 13	— 0.01	— 0.78	— 0.26	— 0.75
Aug. 7 to Aug. 31	9	9	August 21	+ 0.11	— 0.33	+ 1.40	— 0.87
Sep. 3 to Sep. 24	12	12	September 16	+ 0.17	— 0.94	+ 1.97	— 1.87
Oct. 1 to Oct. 30	7	7	October 14	+ 0.18	— 0.57	+ 2.27	— 1.53
Nov. 1 to Nov. 27	8	9	November 14	— 0.09	— 1.14	— 1.53	— 0.77
Nov. 29 to Dec. 30	10	10	December 13	— 0.11	— 0.71	— 1.56	— 0.61

MERCURY.

May 1 to May 8	3	3	May 6	+ 0.39	— 0.49	+ 5.57	+ 1.53
June 14 to June 22	3	3	June 17	+ 0.27	+ 3.24	+ 4.19	+ 2.62
Aug. 9	1	1	August 10	+ 0.27	— 0.22	+ 3.69	— 0.98
Oct. 6	1	1	October 6	+ 0.09	+ 0.25	+ 1.31	— 0.20
Dec. 4 to Dec. 21	4	4	December 15	— 0.30	— 0.20	— 4.17	+ 0.41

VENUS.

Jan. 3 to Jan. 31	4	4	January 17	— 0.54	+ 0.29	— 7.53	+ 1.26
Feb. 9 to Feb. 28	3	3	February 22	— 0.26	+ 5.70	— 4.63	+ 4.94
Mar. 27 to April 26	5	5	April 12	+ 0.28	+ 0.37	+ 3.70	+ 2.01
May 1 to May 28	15	15	May 13	+ 0.34	— 3.63	+ 5.93	— 1.73
June 6 to July 5	5	5	June 23	+ 0.46	— 3.52	+ 6.49	— 3.23
Aug. 10 to Aug. 21	3	3	August 16	— 0.31	— 0.03	— 4.26	+ 1.58

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES—*continued.*VENUS—*continued.*

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1848.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Sep. 1 to Sep. 21	6	6	September 10	— 0.32	— 0.99	— 4.80	+ 1.00
Oct. 2 to Oct. 31	3	3	October 13	— 0.45	— 1.69	— 6.72	+ 0.39
Nov. 7 to Nov. 21	4	5	November 13	— 0.33	— 1.48	— 4.60	— 1.16
Dec. 9 to Dec. 22	3	3	December 17	— 0.19	— 4.35	— 1.58	— 4.84

MARS.

Jan. 4 to Jan. 15	2	2	January 10	— 1.16	— 7.34	— 13.48	— 12.35
Feb. 1 to Feb. 18	4	4	February 6	— 1.04	— 7.15	— 12.25	— 10.84

FLORA.

Feb. 1 to Feb. 3	2	3	February 3	+ 2.38	— 0.37	+ 33.36	+ 5.30
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VESTA.

Aug. 10 to Sep. 7	8	8	August 27	+ 1.56	— 11.27	+ 26.16	— 1.00
Sep. 16 to Oct. 10	9	9	September 28	+ 1.70	— 8.63	+ 26.75	+ 2.29
Oct. 21 to Oct. 30	5	4	October 27	+ 1.55	— 3.94	+ 22.66	+ 5.49
Nov. 10 to Dec. 2	3	4	November 22	+ 1.20	— 2.48	+ 17.33	+ 4.81
Dec. 21 to Dec. 22	2	1	December 21	+ 0.87	+ 0.72	+ 11.65	+ 5.84

IRIS.

Dec. 22	1	1	December 22	+ 20.06	+ 142.59	+ 332.91	+ 22.68
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METIS.

May 2 to May 10	6	7	May 6	+ 0.07	+ 0.01	+ 0.99	— 0.30
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JUNO.

Dec. 3 to Dec. 26	4	4	December 18	+ 15.22	+ 2.66	+ 250.09	+ 17.26
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MEAN ERRORS of the TABULAR GEOCENTRIC PLACES—*continued.*

PALLAS.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1848.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Mar. 7 to April 1	5	5	March 24	— 1 ^s .05	+ 37 [″] .51	— 0 [″] .72	+ 40 [″] .68
April 3 to April 19	4	4	April 11	— 0.97	+ 34.07	— 0.77	+ 36.92

CERES.

Feb. 2	1	1	February 2	+ 4.82	+ 40.00	+ 83.11	+ 7.68
Mar. 8	1	1	March 8	+ 6.05	+ 42.27	+ 100.26	+ 2.63
Mar. 29 to April 19	7	7	April 6	+ 5.75	+ 33.68	+ 91.32	— 2.73
April 26 to May 5	6	6	April 30	+ 5.09	+ 25.03	+ 78.60	— 6.51

JUPITER.

Jan. 15 to Feb. 3	5	5	January 28	— 0.08	— 2.28	— 1.32	— 2.17
Feb. 9 to Feb. 22	7	7	February 16	— 0.20	— 2.07	— 2.92	— 1.84
Feb. 28 to Mar. 23	8	8	March 11	— 0.20	— 2.65	— 2.96	— 2.42
Oct. 29 to Nov. 20	8	8	November 10	— 0.31	— 3.12	— 5.26	— 1.51
Nov. 29 to Dec. 22	8	9	December 12	— 0.36	— 2.76	— 5.84	— 0.91

SATURN.

Aug. 2 to Sep. 4	8	8	August 20	— 1.77	+ 7.06	— 27.09	— 4.02
Sep. 6 to Sep. 22	9	9	September 16	— 1.70	+ 6.64	— 25.96	— 3.93
Oct. 5 to Oct. 30	12	11	October 17	— 1.60	+ 5.33	— 24.03	— 4.49
Nov. 3 to Nov. 28	9	10	November 14	— 1.53	+ 4.10	— 22.58	— 5.18
Dec. 2 to Dec. 22	7	7	December 12	— 1.52	+ 3.85	— 22.35	— 5.37

URANUS.

Jan. 4 to Jan. 15	2	2	January 10	+ 8.83	— 47.10	+ 139.86	+ 7.52
Aug. 24 to Sep. 22	7	7	September 8	+ 9.84	— 51.10	+ 154.81	+ 7.05

MEAN ERRORS of the TABULAR GÉOCENTRIC PLACES—*concluded.*URANUS—*continued.*

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day. 1848.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Oct. 6 to Oct. 30	7	7	October 19	+ 9 ^s ·82	— 52 ^s ·16	+155 ^s ·04	+ 6 ^s ·69
Nov. 4 to Nov. 24	7	7	November 13	+ 9 ^s ·68	— 52 ^s ·29	+153 ^s ·26	+ 6 ^s ·23
Dec. 2 to Dec. 23	5	5	December 14	+ 9 ^s ·41	— 51 ^s ·19	+149 ^s ·13	+ 6 ^s ·00

NEPTUNE.

July 15 to Aug. 9	4	4	July 29	+ 1 ^s ·04	— 5 ^s ·18	+ 16 ^s ·14	+ 0 ^s ·64
Aug. 19 to Sep. 22	13	13	September 8	+ 1 ^s ·37	— 8 ^s ·16	+ 21 ^s ·71	— 0 ^s ·49
Oct. 5 to Oct. 21	7	7	October 12	+ 1 ^s ·64	— 10 ^s ·21	+ 26 ^s ·13	— 1 ^s ·10
Oct. 27 to Nov. 24	6	6	November 10	+ 1 ^s ·71	— 9 ^s ·86	+ 26 ^s ·97	— 0 ^s ·41

ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.

MERCURY.

Day, 1848.	Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of the Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.					Error of Tables in Hel. E. P. D.
May 6	+ 5 ^s ·57 = + 0 ^s ·214 δL — 11365 ^s $\delta \rho$ + 0 ^s ·786 δl + 4104 ^s δr					+ 5 ^s ·20
June 17	+ 4 ^s ·19 = — 0 ^s ·022 + 228000 + 1 ^s ·022 — 95260					+ 5 ^s ·57
August 10	+ 3 ^s ·69 = — 0 ^s ·001 — 215010 + 1 ^s ·001 + 68815					— 2 ^s ·90
October 6	+ 1 ^s ·31 = + 0 ^s ·224 + 140960 + 0 ^s ·776 — 65046					— 0 ^s ·52
December 15	— 4 ^s ·17 = + 0 ^s ·286 — 78661 + 0 ^s ·714 + 35540					+ 1 ^s ·23

VENUS.

January 17	— 7 ^s ·53 = + 0 ^s ·240 δL — 210500 $\delta \rho$ + 0 ^s ·760 δl + 153855 δr					+ 1 ^s ·63
February 22	— 4 ^s ·63 = + 0 ^s ·337 — 146393 + 0 ^s ·663 + 107230					+ 8 ^s ·03
April 12	+ 3 ^s ·70 = + 0 ^s ·389 — 87201 + 0 ^s ·611 + 63208					+ 4 ^s ·05
May 13	+ 5 ^s ·93 = + 0 ^s ·404 — 58360 + 0 ^s ·597 + 41863					— 3 ^s ·82

ERRORS of the TABULAR HELIOCENTRIC PLACES—*continued.*VENUS—*continued.*

Day, 1848.	Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.					Error of Tables in Hel. E. P. D.
June 23	$+ 6''.49 = + 0.412 \delta L - 23906'' \delta \rho + 0.588 \delta l + 16933'' \delta r$					$- 7''.68$
August 16	$- 4.26 = + 0.414 + 20041 + 0.587 - 14254$					$+ 3.76$
September 10	$- 4.80 = + 0.411 + 40663 + 0.539 - 29080$					$+ 2.30$
October 13	$- 6.72 = + 0.402 + 68610 + 0.598 - 49951$					$+ 0.83$
November 13	$- 4.60 = + 0.387 + 97640 + 0.613 - 71843$					$- 2.24$
December 17	$- 1.58 = + 0.352 + 136690 + 0.648 - 100830$					$- 8.12$

MARS.

January 10	$-13.48 = + 1.362 \delta L + 137073 \delta \rho - 0.362 \delta l - 214930 \delta r$					$- 7.25$
February 6	$-12.25 = + 1.055 + 110615 - 0.055 - 176605$					$- 8.02$

VESTA.

August 27	$+ 26''.16 = + 1.630 \delta L - 28430'' \delta \rho$					$- 0''.02 + 6946'' \delta \rho$
September 28	$+ 26.75 = + 1.698 + 12163$					$+ 1.12 + 7332$
October 27	$+ 22.66 = + 1.440 + 36941$					$+ 2.89 + 5956$
November 21	$+ 17.33 = + 1.187 + 40875$					$+ 2.92 + 4014$
December 21	$+ 11.65 = + 0.978 + 35548$					$+ 4.87 + 1660$

JUNO.

December 18	$+250.09 = + 1.963 \delta L + 11590 \delta \rho$					$+ 6.92 + 22051 \delta \rho$
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PALLAS.

March 24	$- 0.72 = + 1.681 \delta L + 31598 \delta \rho$					$+ 23.79 + 2884 \delta \rho$
April 11	$- 0.77 = + 1.464 + 44883$					$+ 23.89 - 775$

ERRORS of the TABULAR HELIOCENTRIC PLACES—*continued.*

CERES.

Day, 1848.	Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.				Error of Tables in Hel. E. P. D.
February 2	+	83.11	=	+ 1.398 δL — 33489 $\delta \rho$	+ 1.12 — 7594 $\delta \rho$
March 8	+	100.26	=	+ 1.646 — 3638	+ 1.20 — 9586
April 6	+	91.32	=	+ 1.531 + 25556	+ 1.54 — 8713
April 30	+	78.60	=	+ 1.316 + 36475	— 0.07 — 6715

JUPITER.

January 28	-	1.32	=	+	1.207 δL + 3813 $\delta \rho$ - 0.207 δl - 20241 δr	-	1.79
February 16	-	2.92	=	+	1.153 + 6239 - 0.153 - 86851	-	1.58
March 11	-	2.96	=	+	1.069 + 7659 - 0.069 - 40381	-	2.23
November 10	-	5.26	=	+	0.990 - 7260 + 0.010 + 39052	-	1.50
December 12	-	5.84	=	+	1.097 - 7010 - 0.097 + 37970	-	0.82

SATURN.

August 20	-	27.09	=	+	1.105 δL - 1105 $\delta \rho$ - 0.105 δl + 10489 δr	-	3.64
September 16	-	25.96	=	+	1.117 + 84 - 0.117 - 831	-	3.52
October 17	-	24.03	=	+	1.094 + 1399 - 0.094 - 13419	-	4.10
November 14	-	22.58	=	+	1.048 + 2102 - 0.048 - 20332	-	4.92
December 12	-	22.35	=	+	0.997 + 2215 + 0.003 - 21603	-	5.36

URANUS.

January 10	+	139.86	=	+	0.996 δL + 500 $\delta \rho$ + 0.004 δl - 10256 δr	+	7.54
September 8	+	154.81	=	+	1.043 - 317 - 0.043 + 6291	+	6.76
October 19	+	155.04	=	+	1.052 + 57 - 0.052 - 1172	+	6.36
November 13	+	153.26	=	+	1.044 + 283 - 0.044 - 5746	+	5.97
December 14	+	149.13	=	+	1.022 + 465 - 0.022 - 9530	+	5.87

ERRORS of the TABULAR HELIOCENTRIC PLACES—concluded.

NEPTUNE.

Day, 1848.		Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.						Error of Tables in Hel. E. P. D.		
July	29	+	16.14	=	+	1.031 δL	—	91" $\delta \rho$ — 0.032 δl + 3038" δr	+	0.62
September	8	+	21.79	=	+	1.033	+	70 — 0.033 — 1863	—	0.47
October	12	+	26.13	=	+	1.022	+	190 — 0.022 — 5332	—	1.08
November	10	+	26.97	=	+	1.007	+	211 — 0.007 — 6781	—	0.41

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE.

Day, 1848.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1848.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Jan. 3	"	"		+ 7.36	— 5.81	D	Mar. 10	"	"		+ 16.68	+ 1.41	D
12	+ 6.09	+ 4.80	R	+ 8.57	+ 3.57	D	11	+ 9.38	+ 1.44	H B	+ 9.47	— 1.97	D
13				+ 12.69	+ 14.24	H B	12				+ 9.62	+ 1.31	H B
15	+ 8.39	+ 6.62	R	+ 12.49	+ 3.35	D	14	+ 5.48	— 4.40	H	+ 10.70	— 8.04	H B
16	+ 7.58	+ 2.73	H	+ 11.83	+ 2.51	H B	17				+ 5.14	— 8.46	D
18				+ 12.32	+ 0.24	H B	18	+ 4.43	— 6.81	R	+ 3.06	— 8.52	D
20				+ 3.64	— 2.20	D	19	+ 6.37	— 9.42	H	+ 6.70	— 9.81	H B
23				+ 2.85	— 3.65	H B	20				+ 4.09	— 7.24	D
26	+ 3.74	— 5.49	R	— 0.69	— 4.50	D	21	+ 9.36	— 5.08	H	+ 4.72	— 7.07	H B
31				+ 5.31	— 3.17	D	24				+ 9.41	— 0.81	D
Feb. 8				+ 20.60	+ 8.99	H B	27				+ 5.77	— 1.91	D
9				+ 18.67	+ 6.69	D	29				— 3.53	+ 12.84	D
11				+ 9.95	+ 3.36	H B	31				— 6.41	+ 4.60	D
12	+ 5.23	+ 2.71	H	+ 9.31	+ 3.62	D	Apr. 6				+ 15.26	— 3.56	M
14	+ 8.74	+ 0.72	R	+ 14.77	+ 1.12	D	10	+ 1.04	— 1.69	R	+ 6.87	— 7.02	H B
15	+ 7.72	— 1.99	H	+ 10.76	— 3.13	H B	11				+ 6.62	— 3.51	M
16	+ 4.18	— 1.90	R	+ 4.90	— 3.50	D	12				+ 7.19	— 10.66	H B
17	+ 3.32	— 3.19	H	+ 5.24	— 7.20	H B	14	+ 6.89	— 7.15	H	+ 12.10	— 10.23	E
18	+ 2.95	— 4.45	R	+ 3.50	— 6.53	D	17	+ 2.78	— 5.86	M	+ 13.37	— 11.84	H B
19				+ 5.58	— 8.49	D	18	+ 7.64	— 6.27	H	+ 12.81	— 5.46	H B
20	+ 3.43	— 6.06	H	+ 1.34	— 5.62	H B	19	+ 5.53	— 2.46	R	+ 7.43	— 6.25	D
22	+ 5.15	— 5.53	H	+ 4.99	— 7.45	D	25	+ 9.28	+ 7.65	R	+ 7.92	+ 8.01	D
23				+ 6.54	— 1.59	H B	26				+ 3.58	+ 8.04	H B
24				+ 7.45	— 7.07	D	28				+ 1.48	+ 10.92	D
25				+ 11.47	— 3.33	H B	May 4				+ 6.59	+ 3.31	H B
27	+ 2.93	+ 0.66	R	+ 3.86	— 0.33	H B	5				+ 7.29	+ 4.68	D
28	+ 1.62	+ 5.96	H	+ 3.14	+ 0.14	D	6				+ 8.38	+ 1.94	D
Mar. 7				+ 22.58	+ 3.18	H B	7	+ 0.38	— 1.56	R	+ 8.83	+ 0.83	H B
9				+ 23.23	+ 8.59	H B	8	+ 1.36	— 0.55	H	+ 3.49	— 5.55	D

The Notes marked [M] refer to the Meridional Observations; those marked [A and A] refer to those made with the Altitude and Azimuth Instrument.

Feb. 15 [M]. The Moon scarcely visible.

Mar. 17 [A and A]. The Moon was very faint; rain was falling steadily throughout the observation.

Mar. 21 [M]. Very faint.

Mar. 27 [A and A]. Very faint.

Mar. 29 [M]. The Moon was scarcely visible, and her horns nearly vertical.

April 11 [A and A]. Faint.

May 7, 8 [M]. Very faint.

ERRORS of the MOON'S TABULAR PLACE—*continued.*

Day, 1848.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1848.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
May 9	+ 0.15	— 5.61	R	+ 8.57	— 5.05	H B	Aug. 2	"	"		+ 18.83	+ 0.52	D
10	+ 4.35	— 4.50	H	+ 5.92	— 7.13	D	4	+ 4.57	— 2.25	E	+ 9.80	+ 0.57	D
11	+ 8.21	— 7.92	H	+ 6.04	— 9.68	D	5	+ 3.39	— 1.14	H	+ 6.36	— 0.83	D
12	+ 10.08	— 6.92	R	+ 10.50	— 9.36	H B	6				+ 3.11	+ 0.51	D
13	+ 8.36	— 6.37	H	+ 8.88	— 11.58	D	7				+ 0.04	+ 0.75	G B A
14	+ 6.32	— 6.20	R	+ 7.66	— 11.88	H B	8				— 0.04	+ 7.34	D
15	+ 6.16	— 3.83	H	+ 5.42	— 8.70	D	9				+ 3.45	— 0.09	D
16	+ 2.99	— 1.26	R	+ 5.47	— 7.43	H B	10	+ 2.70	+ 2.30	R	+ 6.57	+ 5.52	D
17				+ 2.79	— 2.56	D	12				+ 4.81	+ 0.99	D
18	+ 4.79	+ 2.41	R	+ 5.79	— 4.49	D	15				+ 13.45	+ 4.02	D
19				+ 4.81	+ 2.40	H B	16	+ 13.21	+ 6.83	R	+ 14.06	+ 4.04	D
20	+ 9.24	+ 4.02	R	+ 8.16	+ 0.51	D	17	+ 14.15	+ 3.18	R	+ 12.65	+ 5.13	J H
22	+ 10.67	+ 7.11	R	+ 9.26	+ 8.91	D	18	+ 11.86	+ 2.51	R	+ 13.56	+ 3.56	D
23	+ 13.52	+ 6.87	H	+ 5.80	+ 6.95	H B	19	+ 13.51	+ 2.91	R	+ 12.42	+ 1.75	D
24	+ 16.32	+ 10.08	R	+ 17.01	+ 6.74	D	20				+ 12.69	+ 1.87	J H
25				+ 9.93	+ 10.90	H B	21				+ 9.88	— 5.35	D
27				— 0.01	+ 9.49	H B	22	+ 13.03	+ 0.44	M	+ 11.40	— 11.30	D
28				— 6.19	+ 12.34	D	24				+ 8.18	— 12.18	D
June 3				+ 8.00	+ 5.06	D	Sep. 3				+ 9.47	— 1.50	H B
4				+ 16.38	+ 3.11	H B	4	+ 1.14	+ 1.84	R	+ 4.67	+ 2.51	D
5	+ 8.90	+ 2.84	H	+ 11.90	— 0.81	D	6	— 1.31	+ 6.29	R	+ 6.60	+ 0.16	H B
6	+ 5.31	— 0.86	R	+ 10.12	— 2.78	D	8	— 1.21	+ 11.19	R	+ 6.60	+ 6.42	H B
7	+ 0.67	— 4.39	H	+ 8.93	— 7.31	H B	9				+ 9.47	+ 1.48	H B
8				+ 12.84	— 6.92	D	11	+ 3.07	+ 5.25	R	+ 7.20	+ 4.41	H B
11	+ 7.77	— 3.86	R	+ 7.51	— 9.56	H B	12	+ 6.45	+ 7.78	H	+ 19.22	+ 4.34	E
12				+ 7.48	— 5.47	D	13				+ 8.11	+ 9.21	H B
13	+ 5.37	— 0.32	R	+ 6.13	— 7.29	H B	14	+ 13.16	+ 7.28	H	+ 12.88	+ 6.45	E
14				— 1.46	— 5.56	D	15	+ 17.12	+ 7.18	R	+ 9.15	+ 0.99	H B
15	+ 0.78	— 0.75	H	+ 4.40	— 5.41	H B	16	+ 16.94	+ 4.75	H	+ 14.79	+ 4.43	E
16				+ 5.50	— 2.52	D	17	+ 16.08	+ 3.01	H	+ 14.87	— 0.72	H B
20				+ 10.43	+ 6.80	H B	18	+ 15.50	+ 0.79	R	+ 15.89	— 0.81	E
21	+ 15.60	+ 5.78	H	+ 14.08	+ 6.80	D	19	+ 18.57	— 1.63	H	+ 15.25	— 5.17	H B
July 5	+ 9.98	+ 0.68	R	+ 17.88	— 3.35	H B	20	+ 21.33	— 8.27	H	+ 8.78	— 6.12	H B
6	+ 9.15	— 2.25	R	+ 9.86	— 2.13	D	21				+ 10.43	— 11.45	E
7				+ 10.64	— 3.34	H B	22				+ 4.30	— 16.04	H B
8				+ 2.32	— 2.63	D	Oct. 3	+ 3.94	— 4.80	H	+ 5.74	+ 7.63	D
9				+ 2.15	— 3.62	D	5	+ 5.11	— 8.50	R	+ 5.77	+ 3.79	D
10				+ 12.17	— 2.35	H B	6	+ 7.75	+ 3.95	H B	— 2.39	+ 3.10	J H
11	+ 4.55	— 0.31	J H	+ 3.03	— 2.98	D	7				+ 4.07	— 2.04	D
12	+ 6.58	+ 1.21	H	+ 3.52	— 2.66	D	8	+ 2.65	+ 7.10	J H	+ 3.64	+ 2.98	H B
13	+ 0.26	+ 2.00	H	+ 5.37	— 1.27	H B	9	+ 0.72	+ 6.16	R	+ 0.54	+ 1.82	D
14				+ 4.34	— 1.75	D	10	+ 2.41	+ 3.87	G H	+ 2.12	+ 2.25	H B
15	+ 4.56	+ 3.71	H	+ 11.34	+ 0.62	H B	11	+ 4.94	+ 5.23	H B	+ 1.81	— 0.41	D
16	+ 12.68	+ 0.31	R	+ 8.89	— 0.13	D	12	+ 12.85	+ 7.25	H	+ 9.81	+ 2.81	D
17	+ 12.52	+ 6.85	H	+ 10.60	+ 1.74	H B	13				+ 12.77	+ 1.80	H B
18	+ 15.04	+ 5.40	R	+ 12.40	— 0.82	D	14	+ 12.17	+ 8.60	M	+ 16.48	— 0.08	D
20	+ 8.43	+ 0.90	H	+ 12.07	+ 1.53	D	15				+ 15.70	— 3.23	H B
21	+ 13.94	+ 7.03	M	+ 12.35	+ 5.80	H B	16				+ 16.75	— 2.25	D
22				+ 12.12	+ 0.17	D	18	+ 15.87	— 2.84	G	+ 10.03	— 6.17	H B
24				+ 9.14	— 4.15	H B	19				+ 14.85	— 8.63	D
26				+ 5.33	— 6.82	D	21				+ 3.66	— 12.34	D

July 5; Aug. 4, 5, 22; Sep. 19; Oct. 3 [M]. Very faint.

July 14 [A and A]. The observation was made during a storm of thunder and lightning: the Moon's limb was very much distorted.

Sep. 20 [M]. Observed through a fog.

ERRORS of the MOON'S TABULAR PLACE—concluded.

Day, 1848.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1848.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Oct. 22	"	"		- 3'32	- 10'54	H B	Dec. 1	+ 6'98	+ 1'07	H	"	"	
30				+ 21'35	+ 2'99	D	2	+ 7'46	+ 0'17	E	+ 9'33	+ 0'60	D
Nov. 3				+ 11'94	+ 3'59	H B	3	+ 11'56	+ 1'24	R	+ 10'99	+ 1'83	D
4	+ 9'94	- 1'21	R	+ 9'32	+ 4'06	D	4	+ 13'68	+ 2'70	E	+ 15'01	+ 0'77	R
5	+ 11'41	+ 4'18	H	+ 13'44	+ 4'72	H B	5	+ 13'25	+ 0'72	R	+ 12'90	+ 0'02	D
6				+ 13'34	+ 5'70	D	6	+ 13'90	+ 2'19	D	+ 19'99	+ 3'53	E
7	+ 6'49	+ 7'65	H	+ 6'27	+ 5'89	D	8				+ 15'83	- 4'14	D
8				+ 3'35	+ 2'87	H B	9	+ 9'51	- 2'56	R	+ 12'73	- 5'31	E
9	+ 8'82	+ 2'68	R	+ 8'32	+ 2'81	D	10	+ 10'09	- 3'59	D	+ 2'48	- 3'64	D
10	+ 6'02	+ 0'29	H	+ 6'88	- 2'38	D	11	+ 6'79	- 2'60	E	+ 4'93	- 1'16	R
11				+ 9'48	- 2'32	H B	12	+ 5'51	- 4'77	R	+ 4'89	- 4'53	D
12	+ 9'89	- 1'54	H	+ 14'53	- 5'04	D	13	+ 2'92	- 8'74	H	+ 1'67	- 3'87	E
13				+ 10'76	- 9'07	H B	14				+ 4'59	- 3'35	R
14	+ 11'86	- 3'12	H	+ 10'66	- 7'39	D	16				+ 11'25	- 7'97	R
15	+ 8'96	- 5'45	D	+ 15'67	- 9'97	R	17	+ 7'76	- 8'57	D	+ 7'51	- 10'60	D
16				+ 14'27	- 11'53	E	18				+ 13'28	- 12'16	E
17	+ 13'42	- 9'67	R	+ 12'24	- 10'28	R	20	+ 8'67	- 0'89	M	+ 10'18	- 7'33	R
18	+ 9'55	- 13'15	D	+ 10'30	- 12'91	D	21	+ 9'39	- 3'27	G	+ 6'66	- 4'61	D
20	+ 9'06	- 7'04	D	+ 11'41	- 14'87	R	22				+ 10'32	- 3'80	R
							23				+ 10'94	- 1'38	D
							28				+ 17'62	+ 4'97	R

Nov. 4 [M]. Very faint..

Nov. 8; Dec. 23 [A and A]. The Moon very faint.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

THE DURATION OF TRANSIT

OF

THE MOON'S DIAMETER,

WITH THE NORTH-EAST EQUATOREAL.

1848.

Month and Day, 1848.	Limb Observed.	I.	II.	III.	IV.	V. Wire.	Mean of Wires.	Difference of Times of Transit of Limbs.	Observer.
Nov. 10	1 L.	42 ^s ·5	52 ^s ·5	2 ^s ·6	12 ^s ·8	2. 17. 23 ^s ·6	2. 17. 2 ^s ·80	^m ^s 2. 23 ^s ·82	H
	2 L.	5·8	16·5	26·5	36·8	2. 19. 47·5	2. 19. 26·62		
	1 L.	36·8	47·3	57·8	8·0	2. 24. 18·6	2. 23. 57·70	2. 23·84	
	2 L.	0·8	11·0	21·5	32·0	2. 26. 42·4	2. 26. 21·54		
	1 L.	26·0	36·3	46·6	57·0	2. 28. 7·6	2. 27. 46·70	2. 23·64	
	2 L.	49·6	0·0	10·5	20·6	2. 30. 31·0	2. 30. 10·34		
	1 L.	59·5	9·5	19·8	30·1	2. 31. 40·7	2. 31. 19·92	2. 23·80	
	2 L.	23·0	33·4	43·6	54·0	2. 34. 4·6	2. 33. 43·72		
	1 L.	58·7	8·9	19·0	29·6	2. 41. 40·0	2. 41. 19·24	2. 23·98	
	2 L.	22·6	32·8	43·0	53·7	2. 44. 4·0	2. 43. 43·22		

The observations were much interrupted by clouds.
No correction is needed for defective illumination.

The following Result is obtained, considering the Clock to be about 23^s fast.

Day of Observation, 1848.	Observed Mean Duration of Transit.	Approximate Sidereal Time.	Tabular Duration of Transit.	Apparent Error of Tables.
Nov. 10	^m ^s 2. 23 ^s ·82	^h ^m 2. 30	^m ^s 2. 23 ^s ·42	— ^s 0·40

ROYAL OBSERVATORY, GREENWICH.

REMARKS ON THE PLANET SATURN

AS VIEWED DURING THE DISAPPEARANCE OF HIS RING;

AND

REMARKS ON A STAR IN OPHIUCHUS

WHOSE GREAT VARIABILITY WAS DETECTED BY

MR. HIND:

FROM

OBSERVATIONS MADE WITH THE TELESCOPE OF THE SOUTH-EAST EQUATOREAL.

1848.

REMARKS ON THE PLANET SATURN, AT THE ROYAL OBSERVATORY, GREENWICH, 1848.

1848, *September 15.*

This evening I viewed Saturn with the middle power on the S.E. Equatoreal, and saw him steady and well-defined. Three satellites only were seen (one to the right, the Huygenian, and a small one to the left), unless a star a considerable distance to the right were a satellite. No trace whatever of the ring, unless that, as I fancied two or three times, there was a minute interruption (as by a shadow) on the right hand limb, and a very little above the middle as regards the line of belts. The inequality of the polar and equatoreal diameters was sufficiently conspicuous, and the form appeared to be not elliptical but square-shouldered, as described by Sir W. Herschel. The belts had not at all the appearance of the quintuple belt as described by Sir W. Herschel, but were as follows. A vivid narrow belt a little below the middle, and on each side of this a broad dark belt, strongly contrasted with the bright belt, and covering the whole of the planet on each side of the belt to near the poles, where I believed there was a lighter colour contrasting but faintly with the dark. The breadth of the bright belt was perhaps one-eighth of the diameter; I think it was entirely below the middle.

G. B. AIRY.

1848, *September 16.*

This evening I viewed Saturn with the middle power on the S.E. Equatoreal. I had slightly altered the adjustment of the object-glass, and the Dome had been open several hours, and I saw the planet very well. Not a trace of the ring. The bright belt and the lower dark belt or broad space seen as yesterday. The upper broad space certainly divided by one faint bright belt; or, as I sometimes thought, by two.

G. B. AIRY.

1848, *September 17.*

I again viewed Saturn. After the Dome had been open some time he was well seen, though the sky was hazy. Certainly one faint bright belt through the upper dark space. The upper edge of the brilliant belt is a diameter as nearly as possible. Both yesterday and to-day the planet did not appear square-shouldered.

G. B. AIRY.

REMARKS ON A STAR IN OPHIUCHUS, OF GREAT VARIABILITY,
AT THE ROYAL OBSERVATORY, GREENWICH, 1848.

1848.	REMARKS.	Observer.
May 9	Visible to the naked eye, and appears a little brighter than 20 Ophiuchi. With a high power it appears to have many red rays. Through the finder it appeared well-defined and of a bright orange colour. This star is in a line with η and 20 Ophiuchi. It is fully of the 5th magnitude.	R
May 10	Visible to the naked eye, and apparently of the 4th magnitude; it appeared of a colour resembling tarnished silver. The image was very unsteady.	H
May 11	Appearance the same as on March 9. The observer compared it with 20 Ophiuchi: it is somewhat brighter. Not a good night for trial, the air being hazy.	R
May 18	The star appeared of a yellowish colour, and tinged with red on the apparent upper side. It is now of the 6th magnitude.	R
May 20	Appearance as on the 18th, tinged with red on the apparent upper side; it seemed larger than on the 18th. Of about the 5.6th magnitude.	R
May 24	The night was not favourable, thin cirrus clouds occupying a great part of the heavens. The star appeared smaller than on the 10th, and the colour certainly that of tarnished silver: very tremulous and badly defined.	H
May 27	Of a pale reddish colour, and of about the 6th magnitude.	R
June 6	Brighter than on May 27: it was compared with others in the neighbourhood, from all of which it differed by its singular red appearance: it was more decidedly red than on May 27. The sky was particularly clear this evening: the observer judged the star to be of the 5.6th magnitude.	R
July 5	This star appeared of the same colour as on June 6th, but smaller. Between the 6th and 7th magnitudes.	R
July 6	Colour as before, and not much brighter than a star of the 7th magnitude.	R

ROYAL OBSERVATORY, GREENWICH.

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF

ENCKE'S COMET AND NEIGHBOURING STARS,

OBSERVED WITH

THE EQUATOREALS.

1848.

Day 1848.	Name of Equa- toreal.	No. of Series.	Object.	Clock Time of Transit.	Clock Slow.	Sidereal Time of Transit.	Reading of Hour Circle in Time.	Approx. Hour Angle East.	Approx. N. P. D.
Oct. 6	S E	1	* (q ₁). Comet.	^h 0. 45. 41.5 ^m 46. 8.0 ^s	^s 49.5	^h 0. 46. 31.0 ^m 46. 57.5 ^s	^h ^m ^s	^h 6. 2 ^m	^o 37. 31 ['] 37. 31
		2	* (q ₁). Comet.	0. 47. 31.5 47. 57.5	49.5	0. 48. 21.0 48. 47.0		6. 0	37. 31 37. 31
		3	* (q ₁). Comet.	0. 50. 10.5 50. 37.0	49.5	0. 51. 0.0 51. 26.5	12. 1. 22	5. 58	37. 31 37. 31
		4	* (q ₁). Comet.	1. 1. 8.0 1. 40.0	49.5	1. 1. 57.5 2. 29.5		5. 47	37. 31 37. 31
		5	* (q ₁). Comet.	1. 4. 8.4 4. 42.0	49.5	1. 4. 57.9 5. 31.5		5. 44	37. 31 37. 31
		6	* (q ₁). Comet.	1. 7. 13.5 7. 52.5	49.5	1. 8. 3.0 8. 42.0		5. 41	37. 31 37. 31
		7	* (q ₁). Comet.	1. 30. 51.5 31. 43.0	49.5	1. 31. 41.0 32. 32.5		5. 17	37. 31 37. 31
		8	* (q ₁). Comet.	1. 33. 14.5 34. 8.0	49.5	1. 34. 4.0 34. 57.5		5. 15	37. 31 37. 31
		9	* (q ₁). Comet.	1. 42. 2.5 43. 2.5	49.5	1. 42. 52.0 43. 52.0		5. 6	37. 31 37. 31
		10	B. A. C. 2300.	2. 18. 19.5	49.5	2. 19. 9.0	13. 24. 56	4. 35	37. 1
Oct. 10	S E	11	* (q ₂). Comet.	0. 29. 5.0 31. 21.0	56.1	0. 30. 1.1 32. 17.1		7. 22	36. 53 36. 55
		12	* (q ₂). Comet.	0. 36. 12.5 38. 32.0	56.1	0. 37. 8.6 39. 28.1	22. 44. 23	7. 15	36. 53 36. 55
		13	27 Lyncis.	0. 58. 49.5	56.1	0. 59. 45.6	23. 1. 54	6. 57	38. 4
		14	27 Lyncis.	1. 1. 2.8	56.1	1. 1. 58.9	23. 4. 7	6. 55	38. 4
Nov. 6	N E	15	Comet. Weisse XIII. 364	8. 14. 29.5 14. 44.5	-14.9	8. 14. 14.6 14. 29.6		5. 8	83. 32 83. 12
		17	Comet. Weisse XIII. 364	8. 22. 15.5 22. 27.5	-14.9	8. 22. 0.6 22. 12.6		5. 0	83. 32 83. 12

Nov. 6. The Comet was tolerably bright, and bore a little illumination of the field.

Correction for Refraction in R. A.	Correction for Parallax in R. A.	Instrumental R. A. corrected for Refraction and Parallax.	Assumed R. A. of Star.	Apparent Correction for Index Error.	R. A. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated R. A. of Comet.	Error of Inter- polated R. A.	Observer.
+ 6 ^s .34 + 6 ^s .34	s -1.27	h m s	h m s 6. 48. 53.25	s	h m s 6. 49. 18.48	h m s 11. 43. 57.1	h m s 6. 48. 38.63	-39.85	H B
+ 6.30 + 6.30	-1.27				6. 49. 17.98	11. 45. 46.4	6. 48. 39.72	-38.26	
+ 6.26 + 6.26	-1.27	6. 49. 44.26 6. 50. 9.49		- 51.01	6. 49. 18.48	11. 48. 25.4	6. 48. 41.32	-37.16	
+ 6.09 + 6.09	-1.27				6. 49. 23.98	11. 59. 26.6	6. 48. 47.95	-36.03	
+ 6.04 + 6.04	-1.26				6. 49. 25.59	12. 2. 28.1	6. 48. 49.78	-35.81	
+ 5.99 + 5.99	-1.26				6. 49. 30.99	12. 5. 38.1	6. 48. 51.68	-39.31	
+ 5.56 + 5.56	-1.25				6. 49. 43.50	12. 29. 24.7	6. 49. 6.01	-37.49	
+ 5.52 + 5.52	-1.25				6. 49. 45.50	12. 31. 49.3	6. 49. 7.46	-38.04	
+ 5.37 + 5.37	-1.23				6. 49. 52.02	12. 40. 42.3	6. 49. 12.82	-39.20	
+ 4.85		6. 54. 17.85	6. 53. 37.28	- 40.57					
+ 7.52 + 7.52	-1.33		7. 51. 56.57		7. 54. 11.24	11. 13. 35.5	7. 53. 33.91	-37.33	M
+ 7.44 + 7.44	-1.35	7. 52. 53.04 7. 55. 11.19		- 56.47	7. 54. 14.72	11. 20. 45.4	7. 53. 39.29	-35.43	
+ 7.19		7. 57. 58.79	7. 57. 2.42	- 56.37					
+ 7.16		7. 57. 59.06		- 56.64					
+10.29 +10.10	-0.64		13. 22. 20.09		13. 22. 4.64	17. 8. 7.9	13. 22. 8.30	+ 3.66	H B
+ 9.33 + 9.18	-0.63				13. 22. 7.61	17. 15. 52.6	13. 22. 9.86	+ 2.25	

October 6 and 10. The stars q_1 and q_2 have not been observed on the meridian; their right ascensions have been assumed, so as to give errors of the Comet's place agreeing nearly with those resulting from other observations of the Comet.

Day, 1848.	Name of Equatorial.	No. of Series.	Object.	Declination Circle.			Concluded Circle Reading.	Name of Micro- meter.	Pointer Reading of Sector Arc.	Micrometer Reading.	Pointer Reading and Micrometer Reading in Arc.
				Pointer.	Verniers or Microscopes.						
					A	B					
Oct. 10	S E	11	* (q_2).	° ' "	' "	' "	° ' "		^d 40	^r —0.380	^o 3. 41. 52. 66
		12	Comet.				143. 11. 45		40	5.672	3. 43. 49. 58
		13	27 Lyncis.				142. 3. 0				
Nov. 6	N E	16	Comet. Weisse XIII. 364					<i>a</i> <i>b</i>		123.030 114.494	+ 12. 0. 27 — 7. 32. 42
		17	Weisse XIII. 364	83. 10	5. 27. 3	3. 4. 5	83. 14. 15. 9	<i>b</i>		100.000	

Approx. Hour Angle East.	Approx. N. P. D.	Correction for Refraction in N. P. D.	Cor- rection for Parallax in N.P.D.	N. P. D. subject to Instrumental Error.	Assumed N. P. D. of Star.	Apparent Correction for Index Error.	N. P. D. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated N. P. D. of Comet.	Error of Inter- polated N. P. D.	Observer.
^h ^m 7. 22	[°] ['] ["] 36. 53	['] ["] ^{'''} +1. 14.73	"	[°] ['] ["] ^{'''} 3. 43. 7.39	[°] ['] ["] ^{'''} 36. 53. 29.57	[°] ['] ["] ^{'''} 33. 10. 22.18	[°] ['] ["] ^{'''}	^h ^m ^s	[°] ['] ["] ^{'''}	['] ["] ^{'''}	M
7. 15	36. 55	+1. 11.62	-12.92	3. 44. 48.28			36. 55. 10.46	11. 20. 45.4	36. 53. 1.97	-2. 8.49	
6. 57	38. 4	+1. 6.39		37. 58. 6.39	38. 4. 3.92	+ 5. 57.53					
5. 5	83. 32 83. 12	+3. 5.65 +3. 1.90	-11.83	+ 14. 54.09 - 4. 30.52	83. 12. 10.66	83. 16. 41.18	83. 31. 35.27	17. 10. 49.9	83. 29. 18.87	-2. 16.40	H B
5. 0	83. 12	+2. 52.10									

Series 12. The index-correction from Series 11. The star q_2 has not been observed on the meridian, and its N.P.D. is assumed so as to give an error of the Comet's place, nearly consistent with that deduced from other observations.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF THE

TIME OF INGRESS OF MERCURY ON THE SUN'S DISK,

ON 1848, NOVEMBER 8;

AND

MEASURES OF DIFFERENCE OF R. A. AND N. P. D.

OF THE

PLANET AND THE SUN'S LIMBS,

ON 1848, NOVEMBER 8 and 9;

MADE WITH THE EQUATOREALS,

AND

COMPARED WITH THE NAUTICAL ALMANAC.

1848.

OBSERVATIONS of the TIME of INGRESS of MERCURY on the SUN'S DISK, at the Royal Observatory, Greenwich,
1848, November 8.

Phenomenon.	Observer.	Instrument.	Clock or Chronometer.	Time noted.	Time by Hardy.	Sidereal Time.	Mean Solar Time.
(a) Total ingress. . .	G B A	30 inch telescope	Dent 1790	^h 23. ^m 12. ^s 0	^h ^m ^s	^h ^m ^s	^h 23. ^m 7. ^s 13.50
(b) First contact. . .	M	South East Equatoreal	Earnshaw	14. 21. 20	14. 20. 11.2	14. 20. 41.83	23. 5. 43.23
Total ingress. . .	M	South East Equatoreal	Earnshaw	14. 22. 52	14. 21. 43.2	14. 22. 13.83	23. 7. 14.99
(c) First contact. . .	H	46 inch achromatic	Hardy		14. 20. 5	14. 20. 35.63	23. 5. 37.05
Central bisection	H	46 inch achromatic	Hardy		14. 20. 45	14. 21. 15.63	23. 6. 16.94
Total ingress. . .	H	46 inch achromatic	Hardy		14. 21. 27	14. 21. 57.63	23. 6. 58.83
(d) First contact. . .	E	North East Equatoreal	A ¹	14. 20. 30	14. 19. 39.4	14. 20. 10.03	23. 5. 11.52
Total ingress. . .	E	North East Equatoreal	A ¹	14. 22. 23	14. 21. 32.4	14. 22. 3.03	23. 7. 4.22
First contact. . .	R	South East Equatoreal	Earnshaw	14. 21. 20	14. 20. 11.2	14. 20. 41.83	23. 5. 43.23
Total ingress. . .	R	South East Equatoreal	Earnshaw	14. 22. 50	14. 21. 41.2	14. 22. 11.83	23. 7. 12.99
(e) First contact. . .	D	Altitude and Azim. Inst.	G ¹	14. 19. 46	14. 20. 7.5	14. 20. 38.13	23. 5. 39.54
Total ingress. . .	D	Altitude and Azim. Inst.	G ¹	14. 21. 14	14. 21. 35.5	14. 22. 6.13	23. 7. 7.31
(f) Central bisection	H B	5 foot achromatic	Birchall 361	23. 7. 30			23. 5. 19.84
Total ingress. . .	H B	5 foot achromatic	Birchall 361	23. 8. 29			23. 6. 18.84
(g) Total ingress. . .	G	6 foot telescope	Dent 2035	23. 7. 55			23. 7. 10.80
Total ingress. . .	T D	6 foot telescope	Webb 5539	23. 8. 10			23. 8. 1.40
Total ingress. . .	G H	30 inch telescope	M'Cabe 649	23. 11. 15			23. 7. 19.30
Total ingress. . .	J H	6 foot telescope	Dent 2035	23. 7. 58			23. 7. 13.60

- (a) The observation was made by projecting the image of the Sun on a screen. No distortion whatever was observed. The chronometer, Dent 1790, was compared with the ball clock; the comparative times of the clock and chronometer being 22^h. 12^m. 12^s and 22^h. 15^m, and the clock being 1^s. 50 slow.
- (b) The observations by M and R were made by projecting the image of the Sun on a screen carried by the telescope. The first appearance of the planet was instantaneous, an intensely black spot being seen. Before the planet separated from the Sun's border it was drawn out into a long thread, and that thread became narrower near the Sun's border. The time noted is that of the breaking of the thread. Five persons saw the phenomenon above described. There was considerable undulation of the limb of the Sun, but it was not considered that this had any effect on the observation.
- (c) The time of the first contact is believed to be correct to two seconds, the central bisection to about ten seconds, and the total ingress to the nearest second. The circumstances tolerably favourable. Power used about 70.
- (d) The *first contact* is doubtful to a few seconds: the time noted is that at which it was first thought to be seen; though this impression appears, from the other observations, to be erroneous. The Sun's limb was very tremulous. The observation of *total ingress* was good, and the planet, before the ingress was complete, assumed an irregular shape for some seconds.
- (e) The observation was very satisfactory, especially that of the *first contact*. The appearance of the planet was instantaneous, and had somewhat of the same startling effect as the appearance of a star at the dark limb of the Moon. The time noted at the *first contact* is considered to be within one second of the truth; and that at the *second contact* within two seconds or three seconds. No distortion of any kind was observed.

- (f) The unsteadiness of the telescope caused some uncertainty in the observations: the chronometer Birchall 361 was compared with the Transit clock: the respective times of clock and chronometer being $14^{\text{h}}.33^{\text{m}}.35^{\text{s}}\cdot0$ and $23^{\text{h}}.21^{\text{m}}.15^{\text{s}}$.
- (g) The observations by the observers using the six foot telescope on the Magnetic grounds were made by projecting the image of the Sun on a screen of photographic paper, whose surface is very smooth. It is most probable that the observation by T. D. is one minute in error. The chronometers were compared with the ball clock, and the comparisons are given in the table beneath:—

CHRONOMETER.		TIME BY CLOCK.			TIME BY CHRONOMETER.		
		h	m		h	m	s
Dent 2035	....	22.	41	....	22.	41.	45·7
„	....	23.	22	....	23.	22.	45·9
Webb 5538	....	22.	40	....	22.	40.	10·2
„	....	23.	20	....	23.	20.	10·1
M'Cabe 649	....	23.	0	....	23.	3.	57·2
„	....	23.	32	....	23.	35.	57·2

OBSERVATIONS OF DIFFERENCE OF RIGHT ASCENSION										
No. of Series.	Instrument.	Observer.	Object.	WIRES.					Concluded Transit.	Clock Slow.
				I.	II.	III.	IV.	V.		
1	S. E. Equatoreal	M	☉ 1 L. Mercury, center....	45 ^s .5 44 ^s .3	56 ^s .0 55 ^s .0	7 ^s .5 5 ^s .8	18 ^s .5 17 ^s .0	15 ^h . 0 ^m . 29 ^s .3 2. 27 ^s .8	15 ^h . 0 ^m . 7 ^s .36 2. 5 ^s .98	— 38 ^s .1
2	N. E. Equatoreal	E	☉ 1 L. Mercury, 1 L. ,, 2 L.	41 ^s .0 30 ^s .3	51 ^s .4 41 ^s .1	1 ^s .4 50 ^s .5	11 ^s .8 1 ^s .8	15. 25. 22.2 27. 10 ^s .8 27.	15. 25. 1 ^s .56 26. 50 ^s .53 26. 51 ^s .45	— 20 ^s .4
3			☉ 1 L. Mercury, 1 L. ,, 2 L.	55 ^s .8 41 ^s .8	6 ^s .0 52 ^s .4	16 ^s .3 2 ^s .5	26 ^s .5 12 ^s .6	15. 28. 37 ^s .0 30. 22 ^s .0 30.	15. 28. 16 ^s .32 30. 2 ^s .10 30. 2 ^s .50	— 20 ^s .4
4			☉ 1 L. Mercury, 1 L. ,, 2 L.	31 ^s .3 21 ^s .2	44 ^s .4 32 ^s .1	54 ^s .6 41 ^s .3	5 ^s .0 52 ^s .3	15. 32. 15 ^s .2 34. 1 ^s .8 34.	15. 31. 54 ^s .70 33. 41 ^s .43 33. 42 ^s .20	— 20 ^s .4
5			☉ 1 L. Mercury 1 L. ,, 2 L.	48 ^s .3 34 ^s .1	58 ^s .6 45 ^s .1	9 ^s .0 54 ^s .1	19 ^s .2 5 ^s .2	15. 35. 29 ^s .4 37. 14 ^s .7 37.	15. 35. 8 ^s .90 36. 54 ^s .30 36. 55 ^s .15	— 20 ^s .4
6			☉ 1 L. Mercury 1 L. ,, 2 L.	16 ^s .0 0 ^s .8	26 ^s .1 11 ^s .9	36 ^s .2 20 ^s .8	46 ^s .6 32 ^s .0	15. 38. 56 ^s .8 40. 41 ^s .6 40.	15. 38. 36 ^s .34 40. 21 ^s .07 40. 21 ^s .95	— 20 ^s .4
7			☉ 1 L. Mercury 1 L. ,, 2 L.	49 ^s .0 31 ^s .4	59 ^s .2 42 ^s .5	9 ^s .3 51 ^s .8	19 ^s .6 2 ^s .8	15. 42. 30 ^s .0 44. 12 ^s .2 44.	15. 42. 9 ^s .42 43. 51 ^s .80 43. 52 ^s .65	— 20 ^s .4
8	S. E. Equatoreal	M	☉ 1 L. Mercury, center....	39 ^s .8 17 ^s .0	50 ^s .8 28 ^s .2	2 ^s .0 39 ^s .2	13 ^s .0 50 ^s .2	15. 56. 24 ^s .0 58. 1 ^s .2	15. 56. 1 ^s .92 57. 39 ^s .16	— 38 ^s .1
9			☉ 1 L. Mercury, center....	51 ^s .5 28 ^s .1	2 ^s .3 39 ^s .1	14 ^s .0 50 ^s .1	24 ^s .9 1 ^s .1	15. 59. 36 ^s .0 16. 1. 12 ^s .1	15. 59. 13 ^s .74 16. 0. 50 ^s .10	— 38 ^s .1
10			☉ 1 L. Mercury, center....	56 ^s .8 32 ^s .1	8 ^s .0 43 ^s .2	19 ^s .1 54 ^s .2	30 ^s .0 5 ^s .1	16. 2. 41 ^s .1 4. 16 ^s .1	16. 2. 19 ^s .00 3. 54 ^s .14	— 38 ^s .1
11			☉ 1 L. Mercury, center....	39 ^s .5 13 ^s .5	50 ^s .5 24 ^s .5	1 ^s .8 35 ^s .7	12 ^s .9 46 ^s .7	16. 6. 23 ^s .9 7. 57 ^s .5	16. 6. 1 ^s .72 7. 35 ^s .58	— 38 ^s .1
12			☉ 1 L. Mercury, center....	57 ^s .2 30 ^s .1	8 ^s .2 41 ^s .1	19 ^s .5 52 ^s .2	30 ^s .3 3 ^s .2	16. 9. 41 ^s .6 11. 14 ^s .2	16. 9. 19 ^s .36 10. 52 ^s .16	— 38 ^s .1
13			☉ 1 L. Mercury, center....	15 ^s .8 47 ^s .2	26 ^s .8 58 ^s .2	38 ^s .0 9 ^s .2	49 ^s .0 20 ^s .1	16. 13. 0 ^s .3 14. 31 ^s .2	16. 12. 37 ^s .98 14. 9 ^s .18	— 38 ^s .1
14			☉ 1 L. Mercury, center....	45 ^s .8 16 ^s .0	56 ^s .8 27 ^s .0	8 ^s .0 38 ^s .0	19 ^s .0 49 ^s .1	16. 16. 30 ^s .0 18. 0 ^s .1	16. 16. 7 ^s .92 17. 38 ^s .04	— 38 ^s .1
15			☉ 1 L. Mercury, center....	41 ^s .3 10 ^s .5	52 ^s .3 21 ^s .5	3 ^s .5 32 ^s .6	14 ^s .7 43 ^s .6	16. 19. 25 ^s .7 20. 54 ^s .6	16. 19. 3 ^s .50 20. 32 ^s .56	— 38 ^s .1
16			☉ 1 L. Mercury, center....	39 ^s .1 7 ^s .2	50 ^s .0 18 ^s .1	1 ^s .2 29 ^s .2	12 ^s .4 40 ^s .2	16. 22. 23 ^s .5 23. 51 ^s .1	16. 22. 1 ^s .24 23. 29 ^s .16	— 38 ^s .1

of the CENTER of MERCURY and the SUN'S FIRST LIMB.

Sidereal Time of Transit.	Approx. Hour- Angle West.	Approx. N.P.D.	Correction for Refraction.	Correction for Parallax.	Corrected Sidereal Times.	Observed Difference of R. A. of ☉ 1 L. and Mercury's Center.	Mean Solar Time.	Tabular R. A. of ☉ 1 L. and Mercury's Center.	Tabular Difference of R. A.	Error of Tabular Difference.
^h ^m ^s 14. 59. 29.26 15. 1. 27.88	^h ^m 0. 1	[°] ['] [″] 107. 0 107. 2	[″] 0.00 0.00	[″] 0.00 0.00	^h ^m ^s 14. 59. 29.26 15. 1. 27.88	^m ^s 1. 58.62	^h ^m ^s 23. 44. 24.3 23. 46. 22.6	^h ^m ^s 14. 57. 58.69 14. 59. 55.82	^m ^s 1. 57.13	[″] -1.49
15. 24. 41.16 26. 30.59	0. 27	107. 0 107. 1	-0.81 -0.81	+0.04 +0.06	15. 24. 40.39 26. 29.84	1. 49.45	0. 9. 32.1 11. 21.2	14. 58. 2.91 14. 59. 50.68	1. 47.77	-1.68
15. 27. 55.92 29. 41.90	0. 30	107. 0 107. 1	-0.90 -0.90	+0.04 +0.07	15. 27. 55.06 29. 41.07	1. 46.01	0. 12. 46.3 14. 32.0	14. 58. 3.45 14. 59. 50.03	1. 46.58	+0.57
15. 31. 34.30 33. 21.42	0. 33	107. 0 107. 1	-0.99 -0.99	+0.05 +0.08	15. 31. 33.36 33. 20.51	1. 47.15	0. 16. 24.1 18. 10.9	14. 58. 4.07 14. 59. 49.28	1. 45.21	-1.94
15. 34. 48.50 36. 34.33	0. 37	107. 0 107. 1	-1.12 -1.12	+0.06 +0.09	15. 34. 47.44 36. 33.30	1. 45.86	0. 19. 37.8 21. 23.3	14. 58. 4.61 14. 59. 48.62	1. 44.01	-1.85
15. 38. 15.94 40. 1.11	0. 40	107. 0 107. 1	-1.21 -1.21	+0.06 +0.10	15. 38. 14.79 40. 0.00	1. 45.21	0. 23. 4.6 24. 49.5	14. 58. 5.19 14. 59. 47.92	1. 42.73	-2.48
15. 41. 49.02 43. 31.83	0. 44	107. 0 107. 1	-1.34 -1.34	+0.07 +0.11	15. 41. 47.75 43. 30.60	1. 42.85	0. 26. 37.1 28. 19.7	14. 58. 5.78 14. 59. 47.19	1. 41.41	-1.44
15. 55. 23.82 57. 1.06	0. 57	107. 1 107. 0	-1.76 -1.76	+0.09 +0.14	15. 55. 22.15 56. 59.44	1. 37.29	0. 40. 9.7 41. 46.7	14. 58. 8.06 14. 59. 44.43	1. 36.37	-0.92
15. 58. 35.64 16. 0. 12.00	1. 0	107. 1 107. 0	-1.87 -1.87	+0.09 +0.15	15. 58. 33.86 16. 0. 10.28	1. 36.42	0. 43. 21.0 44. 57.1	14. 58. 8.59 14. 59. 43.78	1. 35.19	-1.23
16. 1. 40.90 3. 16.04	1. 4	107. 1 107. 0	-2.01 -2.01	+0.10 +0.16	16. 1. 38.99 3. 14.19	1. 35.20	0. 46. 25.8 48. 0.6	14. 58. 9.11 14. 59. 43.15	1. 34.04	-1.16
16. 5. 23.62 6. 57.48	1. 7	107. 1 107. 0	-2.09 -2.09	+0.10 +0.16	16. 5. 21.63 6. 55.55	1. 33.92	0. 50. 7.9 51. 41.5	14. 58. 9.72 14. 59. 42.39	1. 32.67	-1.25
16. 8. 41.26 10. 14.06	1. 10	107. 1 107. 0	-2.23 -2.23	+0.11 +0.17	16. 8. 39.14 10. 12.00	1. 32.86	0. 53. 25.0 54. 57.5	14. 58. 10.27 14. 59. 41.72	1. 31.45	-1.41
16. 11. 59.88 13. 31.08	1. 13	107. 1 107. 0	-2.33 -2.33	+0.11 +0.18	16. 11. 57.66 13. 28.93	1. 31.27	0. 56. 43.1 58. 14.0	14. 58. 10.85 14. 59. 41.04	1. 30.19	-1.08
16. 15. 29.82 16. 59.94	1. 17	107. 1 107. 0	-2.48 -2.48	+0.12 +0.19	16. 15. 27.46 16. 57.65	1. 30.19	1. 0. 12.4 1. 42.3	14. 58. 11.44 14. 59. 40.33	1. 28.89	-1.30
16. 18. 25.40 19. 54.46	1. 20	107. 1 107. 0	-2.58 -2.58	+0.12 +0.19	16. 18. 22.94 19. 52.07	1. 29.13	1. 3. 7.5 4. 36.3	14. 58. 11.92 14. 59. 39.74	1. 27.82	-1.31
16. 21. 23.14 22. 51.06	1. 23	107. 1 107. 0	-2.69 -2.69	+0.13 +0.20	16. 21. 20.58 22. 48.57	1. 27.99	1. 6. 4.8 7. 32.5	14. 58. 12.42 14. 59. 39.13	1. 26.71	-1.28

OBSERVATIONS of DIFFERENCE of N. P. D.

No. of Series.	Instrument.	Observer.	Object.	Clock Time of Observation.	Pointer Reading of Sector Arc.	Micrometer Reading.	Name of Microm. of N. E. Equat.	Pointer Reading and Micrometer Reading in Arc.	Approx. Hour-Angle West.
17	S. E. Equatoreal	M	☉ S. L.	^h 14. ^m 31. ^s 52	^d 59	^r 8.350		^o 5. 30'. 8" 08	— ^h 0. ^m 28
18			Mercury, center....	14. 35. 8	57	4.116		5. 17. 40.40	— 0. 25
19			☉ S. L.	14. 36. 42	59	8.714		5. 30. 15.10	— 0. 23
20			Mercury, center....	14. 37. 59	57	4.000		5. 17. 38.16	— 0. 23
21			☉ S. L.	14. 39. 23	59	9.170		5. 30. 23.90	— 0. 20
22			Mercury, center....	14. 41. 3	57	3.803		5. 17. 34.36	— 0. 20
23			☉ N. L.	14. 43. 41	53	11.800		4. 57. 56.63	— 0. 16
24			Mercury, center....	14. 45. 25	57	4.053		5. 17. 39.19	— 0. 15
25			☉ N. L.	14. 46. 50	53	11.797		4. 57. 56.58	— 0. 13
26			Mercury, center....	14. 48. 45	57	3.683		5. 17. 32.05	— 0. 12
27			☉ N. L.	14. 51. 18	53	12.485		4. 58. 9.85	— 0. 8
28			Mercury, center....	14. 53. 10	57	3.677		5. 17. 31.93	— 0. 8
29	N. E. Equatoreal	E	☉ S. L.	15. 6. 14		11.467	<i>a</i>	+ 5. 58.57	0. 7
30			Mercury, center....	15. 6. 14		15.280	<i>b</i>	— 7. 56.95	0. 6
31			☉ S. L.	15. 7. 43		11.468	<i>a</i>	+ 5. 58.60	0. 8
32			Mercury, center....	15. 7. 43		15.274	<i>b</i>	— 7. 56.76	0. 7
33			☉ S. L.	15. 8. 44		11.448	<i>a</i>	+ 5. 57.98	0. 9
34			Mercury, center....	15. 8. 44		15.190	<i>b</i>	— 7. 54.14	0. 8
35			☉ S. L.	15. 10. 19		11.426	<i>a</i>	+ 5. 57.29	0. 11
36			Mercury, center....	15. 10. 19		15.074	<i>b</i>	— 7. 50.52	0. 10
37			☉ S. L.	15. 11. 20		11.735	<i>a</i>	+ 6. 6.95	0. 12
38			Mercury, center....	15. 11. 20		15.120	<i>b</i>	— 7. 51.96	0. 11
39			☉ S. L.	15. 12. 40		11.658	<i>a</i>	+ 6. 4.55	0. 13
40			Mercury, center....	15. 12. 40		15.350	<i>b</i>	— 7. 59.14	0. 12
41			☉ S. L.	15. 14. 2		11.858	<i>a</i>	+ 6. 10.80	0. 15
42			Mercury, center....	15. 14. 2		15.220	<i>b</i>	— 7. 55.08	0. 14

For the S. E. Equatoreal, 1^d of Sector Arc = 5'.33".00, 1^r of Micrometer = 19".291.For the N. E. Equatoreal, 1^r of *a* = 31".270, 1^r of *b* = 31".214.

of the CENTER of MERCURY and the SUN'S NORTH and SOUTH LIMBS.

Approx. N. P. D.	Correction for Refraction.	Correction for Parallax.	Corrected Readings for N. P. D.	Observed Difference of N. P. D. (N. P. D. of ☉ S. L. or N. L. - N. P. D. of Planet).	Mean Solar Time of Observation.	Tabular N. P. D. of Objects. (☉ S. L., ☉ N. L., or Mercury's Center).	Tabular Differ- ence of N. P. D. (N. P. D. of ☉ S. L. or N. L. - N. P. D. of Planet).	Error of Tabular Difference.
107. 16'	+ 2. 29'30	- 8'04	+ 5. 32. 29'34	" "	23. 16. 13'7	107. 15. 31'51	" "	" "
107. 2	+ 2. 27'00	- 11'75	+ 5. 19. 55'65		23. 19. 29'2	107. 2. 50'89		
107. 16	+ 2. 28'74	- 8'04	+ 5. 32. 35'80	+ 12. 42'54	23. 21. 2'9	107. 15. 34'93	" "	+ 6'50
107. 2	+ 2. 26'85	- 11'75	+ 5. 19. 53'26		23. 22. 19'7	107. 2. 45'89		
107. 16	+ 2. 28'40	- 8'05	+ 5. 32. 44'25	+ 12. 55'02	23. 23. 43'5	107. 15. 36'83	" "	+ 1'31
107. 2	+ 2. 26'63	- 11'76	+ 5. 19. 49'23		23. 25. 23'2	107. 2. 40'50		
106. 44	+ 2. 24'11	- 8'02	+ 5. 0. 12'72	- 19. 41'10	23. 28. 0'8	106. 43. 18'08	" "	+ 26'32
107. 2	+ 2. 26'40	- 11'77	+ 5. 19. 53'82		23. 29. 44'5	107. 2. 32'86		
106. 44	+ 2. 23'99	- 8'02	+ 5. 0. 12'55	- 19. 33'96	23. 31. 9'2	106. 43. 20'31	" "	+ 27'27
107. 2	+ 2. 26'23	- 11'77	+ 5. 19. 46'51		23. 33. 3'9	107. 2. 27'00		
106. 44	+ 2. 23'80	- 8'02	+ 5. 0. 25'63	- 19. 20'53	23. 35. 36'5	106. 43. 23'48	" "	+ 24'76
107. 2	+ 2. 26'00	- 11'77	+ 5. 19. 46'16		23. 37. 28'2	107. 2. 19'25		
107. 16	+ 2. 27'80	- 8'05	+ 8. 18'32	+ 14. 1'14	23. 50. 48'0	107. 15. 56'07	+ 14. 0'27	- 0'87
107. 2	+ 2. 25'90	- 11'77	- 5. 42'82		23. 50. 48'0	107. 1. 55'80		
107. 16	+ 2. 27'80	- 8'05	+ 8. 18'35	+ 14. 0'93	23. 52. 16'8	107. 15. 57'12	+ 14. 3'93	+ 3'00
107. 2	+ 2. 25'95	- 11'77	- 5. 42'58		23. 52. 16'8	107. 1. 53'19		
107. 16	+ 2. 27'80	- 8'05	+ 8. 17'73	+ 13. 57'64	23. 53. 17'6	107. 15. 57'83	+ 14. 6'43	+ 8'79
107. 2	+ 2. 26'00	- 11'77	- 5. 39'91		23. 53. 17'6	107. 1. 51'40		
107. 16	+ 2. 27'90	- 8'05	+ 8. 17'14	+ 13. 53'38	23. 54. 52'3	107. 15. 58'96	+ 14. 10'31	+ 16'93
107. 2	+ 2. 26'05	- 11'77	- 5. 36'24		23. 54. 52'3	107. 1. 48'65		
107. 16	+ 2. 27'96	- 8'05	+ 8. 26'86	+ 14. 4'51	23. 55. 53'2	107. 15. 59'68	+ 14. 12'86	+ 8'35
107. 2	+ 2. 26'08	- 11'77	- 5. 37'65		23. 55. 53'2	107. 1. 46'82		
107. 16	+ 2. 28'01	- 8'05	+ 8. 24'51	+ 14. 9'32	23. 57. 12'9	107. 16. 0'62	+ 14. 16'12	+ 6'80
107. 2	+ 2. 26'10	- 11'77	- 5. 44'81		23. 57. 12'9	107. 1. 44'50		
107. 16	+ 2. 28'15	- 8'05	+ 8. 30'90	+ 14. 11'50	23. 58. 34'7	107. 16. 1'59	+ 14. 19'50	+ 8'00
107. 2	+ 2. 26'25	- 11'77	- 5. 40'60		23. 58. 34'7	107. 1. 42'09		

OBSERVATIONS of DIFFERENCE of N. P. D.

No. of Series.	Instrument.	Observer.	Object.	Clock Time of Observation.	Pointer Reading of Sector Arc.	Micrometer Reading.	Name of Microm. of N. E. Equat.	Pointer Reading and Micrometer Reading in Arc.	Approx. Hour-Angle West.
43	N. E. Equatoreal	E	☉ S. L.	^h 15. ^m 15. ^s 30	^d	11·888	<i>a</i>	+ 6. 11·74	^h 0. ^m 16
44			Mercury, center....	15. 15. 30		15·306	<i>b</i>	— 7. 57·76	0. 15
45			☉ S. L.	15. 16. 44		11·826	<i>a</i>	+ 6. 9·80	0. 17
46			Mercury, center....	15. 16. 44		15·473	<i>b</i>	— 8. 2·98	0. 16
47			☉ S. L.	15. 18. 20		11·903	<i>a</i>	+ 6. 12·21	0. 19
48			Mercury, center....	15. 18. 20		15·438	<i>b</i>	— 8. 1·88	0. 18
49			☉ S. L.	15. 19. 17		11·853	<i>a</i>	+ 6. 10·64	0. 20
50			Mercury, center....	15. 19. 17		15·608	<i>b</i>	— 8. 7·19	0. 19
51			☉ S. L.	16. 6. 28		13·200	<i>a</i>	+ 6. 52·76	1. 7
52			Mercury, center....	16. 6. 28		18·084	<i>b</i>	— 9. 24·47	1. 6
53			☉ S. L.	16. 7. 37		13·214	<i>a</i>	+ 6. 53·20	1. 8
54			Mercury, center....	16. 7. 37		18·120	<i>b</i>	— 9. 25·60	1. 7
55			☉ S. L.	16. 8. 39		13·230	<i>a</i>	+ 6. 53·70	1. 9
56			Mercury, center....	16. 8. 39		18·215	<i>b</i>	— 9. 28·56	1. 8
57			☉ S. L.	16. 9. 35		13·248	<i>a</i>	+ 6. 54·27	1. 10
58			Mercury, center....	16. 9. 35		18·245	<i>b</i>	— 9. 29·50	1. 9
59			☉ S. L.	16. 10. 28		13·224	<i>a</i>	+ 6. 53·51	1. 11
60			Mercury, center....	16. 10. 28		18·300	<i>b</i>	— 9. 31·22	1. 10
61			☉ S. L.	16. 11. 47		13·316	<i>a</i>	+ 6. 56·39	1. 12
62			Mercury, center....	16. 11. 47		18·320	<i>b</i>	— 9. 31·84	1. 11
63			☉ S. L.	16. 13. 36		13·306	<i>a</i>	+ 6. 56·08	1. 14
64			Mercury, center....	16. 13. 36		18·400	<i>b</i>	— 9. 34·34	1. 13

One revolution of *a* = 31"·270.One revolution of *b* = 31"·214.

of the CENTER of MERCURY and the SUN'S NORTH and SOUTH LIMBS.

Approx. N. P. D.	Correction for Refraction.	Correction for Parallax.	Corrected Readings for N. P. D.	Observed Difference of N. P. D. (N. P. D. of ☉ S. L. - N. P. D. of Planet).	Mean Solar Time of Observation.	Tabular N. P. D. of Objects. (☉ S. L., or Mercury).	Tabular Difference of N. P. D. (N. P. D. of ☉ S. L. - N. P. D. of Planet).	Error of Tabular Difference.
107. 16	+ 2. 28. 23	- 8. 05	+ 8. 31. 92	+ 14. 15. 12	0. 0. 2. 5	107. 16. 2. 63	+ 14. 23. 10	+ 7. 98
107. 2	+ 2. 26. 33	- 11. 77	- 5. 43. 20		0. 0. 2. 5	107. 1. 39. 53		
107. 16	+ 2. 28. 30	- 8. 05	+ 8. 30. 05	+ 14. 18. 40	0. 1. 16. 3	107. 16. 3. 50	+ 14. 26. 13	+ 7. 73
107. 2	+ 2. 26. 40	- 11. 77	- 5. 48. 35		0. 1. 16. 3	107. 1. 37. 37		
107. 16	+ 2. 28. 37	- 8. 05	+ 8. 32. 53	+ 14. 19. 64	0. 2. 52. 0	107. 16. 4. 63	+ 14. 30. 06	+ 10. 42
107. 2	+ 2. 26. 54	- 11. 77	- 5. 47. 11		0. 2. 52. 0	107. 1. 34. 57		
107. 16	+ 2. 28. 40	- 8. 05	+ 8. 30. 99	+ 14. 23. 33	0. 3. 48. 9	107. 16. 5. 31	+ 14. 32. 41	+ 9. 08
107. 2	+ 2. 26. 61	- 11. 76	- 5. 52. 34		0. 3. 48. 9	107. 1. 32. 90		
107. 17	+ 2. 37. 00	- 7. 98	+ 9. 21. 78	+ 16. 23. 62	0. 50. 52. 1	107. 16. 38. 73	+ 16. 28. 66	+ 5. 04
107. 0	+ 2. 34. 30	- 11. 67	- 7. 1. 84		0. 50. 52. 1	107. 0. 10. 07		
107. 17	+ 2. 37. 33	- 7. 98	+ 9. 22. 55	+ 16. 25. 19	0. 52. 0. 9	107. 16. 39. 53	+ 16. 31. 46	+ 6. 27
107. 0	+ 2. 34. 63	- 11. 67	- 7. 2. 64		0. 52. 0. 9	107. 0. 8. 07		
107. 17	+ 2. 37. 66	- 7. 98	+ 9. 23. 38	+ 16. 28. 66	0. 53. 2. 8	107. 16. 40. 26	+ 16. 34. 01	+ 5. 35
107. 0	+ 2. 34. 95	- 11. 67	- 7. 5. 28		0. 53. 2. 8	107. 0. 6. 25		
107. 17	+ 2. 38. 00	- 7. 98	+ 9. 24. 29	+ 16. 30. 17	0. 53. 58. 6	107. 16. 40. 94	+ 16. 36. 34	+ 6. 17
107. 0	+ 2. 35. 28	- 11. 66	- 7. 5. 88		0. 53. 58. 6	107. 0. 4. 60		
107. 17	+ 2. 38. 31	- 7. 98	+ 9. 23. 84	+ 16. 31. 11	0. 54. 51. 5	107. 16. 41. 56	+ 16. 38. 48	+ 7. 37
107. 0	+ 2. 35. 61	- 11. 66	- 7. 7. 27		0. 54. 51. 5	107. 0. 3. 08		
107. 17	+ 2. 38. 64	- 7. 98	+ 9. 27. 05	+ 16. 34. 60	0. 56. 10. 3	107. 16. 42. 47	+ 16. 41. 74	+ 7. 14
107. 0	+ 2. 35. 94	- 11. 65	- 7. 7. 55		0. 56. 10. 3	107. 0. 0. 73		
107. 17	+ 2. 39. 30	- 7. 97	+ 9. 27. 41	+ 16. 36. 81	0. 57. 59. 0	107. 16. 43. 76	+ 16. 46. 21	+ 9. 40
107. 0	+ 2. 36. 59	- 11. 65	- 7. 9. 40		0. 57. 59. 0	106. 59. 57. 55		

At about 16^h Sidereal Time some micrometrical measures of the diameter of Mercury were made with the N. E. Equatoreal: the mean value of the diameter in revolutions of the micrometer (*b*) from 10 measures, was 0^r.269 or 8^{''}.40: the tabular diameter for the same time was 9^{''}.60.

ROYAL OBSERVATORY, GREENWICH.

ECLIPSES OF THE MOON;

AND

ECLIPSES, OCCULTATIONS, AND TRANSITS

OF

JUPITER'S SATELLITES,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1848.

ECLIPSES of the MOON, 1848.

Day.	Phase of Phenomenon.	Observer.	Instrument.	Clock.	Time noted.	Time by Hardy.	Sidereal Time.	Mean Solar Time.
Mar. 19	End of Eclipse	H B	Alt. & Az.	G. 1	^h 10. ^m 57. ^s 10	^h 10. ^m 57. ^s 29	^h 10. ^m 57. ^s 35.71	^h 11. ^m 7. ^s 8.79
		H	46 in. Achr.	Hardy	10. 58. 30	10. 58. 30	10. 58. 36.71	11. 8. 9.63
Sep. 12	Beginning of Eclipse.....	E {	Finding tel. of S. E. Eq.	} Earn.	4. 0. 30	4. 0. 23	4. 0. 33.56	16. 31. 23.24
	Shadow bisects a dark spot ..				3. 0	2. 53	3. 3.56	33. 52.83
	Shadow bisects Copernicus...				15. 30	15. 23	15. 33.57	46. 20.79
	Shadow touches Tycho				22. 50	22. 43	22. 53.58	53. 39.60
	Shadow bisects Tycho				23. 50	23. 43	23. 53.58	54. 39.43
	Tycho totally covered				24. 45	24. 38	24. 48.58	55. 34.29
	Beginning of Eclipse	R	S. E. Eq.	Earn.	4. 0. 45	4. 0. 38	4. 0. 48.56	16. 31. 38.20
	Shadow bisects a dark spot ..				3. 10	3. 3	3. 13.56	34. 2.80
	Shadow bisects Copernicus ..				15. 20	15. 13	15. 23.57	46. 10.81
	Shadow touches Tycho				23. 0	22. 53	23. 3.58	53. 49.56
	Shadow bisects Tycho				24. 0	23. 53	24. 3.58	54. 49.40
	Tycho totally covered				24. 50	24. 43	24. 53.58	55. 39.27

March 19. The time of the termination of the Eclipse was observed with difficulty on account of clouds.

September 12. The twilight and the Moon's approach to the horizon prevented further observations.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1848.

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Sidereal Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							h m s	h m s	h m s	h m s	h m s	m s
Feb. 1	III	Ecl. reap..		E	N.E. Eq.	A ¹	4. 59. 30.0	4. 59. 46.4	5. 0. 30.82	8. 15. 50.02	5. 1. 45.0	+ 1. 14.18
		Ecl. reap..		R	S.E. Eq.	Earn.	4. 59. 30.0	4. 59. 58.0	5. 0. 42.42	8. 16. 1.60	5. 1. 45.0	+ 1. 2.58
22	I	Egress....	First appear.	H B	N.E. Eq.	A ¹	7. 2. 10.0	7. 1. 43.5	7. 2. 40.28	8. 55. 5.41		
		Egress....	Central bisect	H B	N.E. Eq.	A ¹	7. 3. 30.0	7. 3. 3.5	7. 4. 0.28	8. 56. 25.19	7. 1. ...	
		Egress....	Last contact	H B	N.E. Eq.	A ¹	7. 4. 30.0	7. 4. 3.5	7. 5. 0.28	8. 57. 25.03		
27	II	Ecl. reap..		M	S.E. Eq.	Earn.	5. 49. 0.0	5. 49. 47.0	5. 50. 45.36	7. 23. 42.74	5. 50. 45.6	+ 0.24
Mar. 1	I	Ecl. reap..		R	S.E. Eq.	Earn.	7. 32. 38.0	7. 33. 26.5	7. 34. 25.88	8. 55. 18.55	7. 34. 18.0	— 7.88
	(a)	Ecl. reap..		H B	N.E. Eq.	A ¹	7. 34. 15.0	7. 33. 35.4	7. 34. 34.78	8. 55. 27.42	7. 34. 18.0	— 16.78
7	I	(b) Ingress...	First contact	R	S.E. Eq.	Earn.	9. 15. 0.5	9. 14. 49.6	9. 15. 51.57	10. 12. 52.19		
		Ingress...	Central bisect	R	S.E. Eq.	Earn.	9. 17. 30.0	9. 17. 19.6	9. 18. 21.57	10. 15. 21.78	9. 18. ...	
		Ingress...	Last contact	R	S.E. Eq.	Earn.	9. 20. 0.0	9. 19. 49.6	9. 20. 51.57	10. 17. 51.37		
7	I	(c) Egress....	First appear.	R	S.E. Eq.	Earn.	11. 33. 0.0	11. 32. 49.6	11. 33. 51.61	12. 30. 29.62		
		Egress....	Central bisect	R	S.E. Eq.	Earn.	11. 35. 30.0	11. 35. 19.6	11. 36. 21.61	12. 32. 59.21	11. 37. ...	
		Egress....	Last contact	R	S.E. Eq.	Earn.	11. 38. 0.0	11. 37. 49.6	11. 38. 51.61	12. 35. 28.80		
30	II	Ecl. reap..		E	S.E. Eq.	Earn.	7. 37. 50.0	7. 38. 38.5	7. 38. 48.81	7. 5. 39.49	7. 39. 46.1	+ 57.29
31	I	Occult. im.	First contact	R	S.E. Eq.	Earn.	8. 4. 0.0	8. 4. 48.5	8. 4. 59.72	7. 27. 50.20		
		Occult. im.	Central bisect	R	S.E. Eq.	Earn.	8. 7. 0.0	8. 7. 48.5	8. 7. 59.72	7. 30. 49.71	8. 8. ...	
		Occult. im.	Totally imm.	R	S.E. Eq.	Earn.	8. 10. 0.0	8. 10. 48.5	8. 10. 59.72	7. 33. 49.22		
31	I	(d) Ecl. reap..		R	S.E. Eq.	Earn.	11. 42. 30.0	11. 43. 18.5	11. 43. 29.78	11. 5. 44.47	11. 43. 13.3	— 16.48
Apr. 4	II	(e) Ingress...	First contact	GBA	12ft. Tel.	{ Chronometer, Brockb. 427. }	4. 34. 30.0	10. 2. 2.8	10. 2. 14.26	9. 9. 1.91		
		Ingress...	Last contact	GBA	12ft. Tel.		4. 38. 0.0	10. 5. 32.5	10. 5. 43.96	9. 12. 31.04	10. 3. ...	
4	IV	(f) Ecl. disap.		GBA	12ft. Tel.	{ watch }	5. 23. 35.0	10. 51. 16.0	10. 51. 27.46	9. 58. 7.01	10. 48. 2.8	— 3. 24.66
6	III	(g) Ecl. reap..		H	N.E. Eq.	A ¹	10. 44. 0.0	10. 43. 49.0	10. 43. 15.99	9. 42. 5.11	10. 43. 38.8	+ 22.81
		(h) Ecl. reap..		R	S.E. Eq.	Earn.	10. 42. 52.0	10. 43. 41.8	10. 43. 52.89	9. 42. 41.91	10. 43. 38.8	— 14.09
27	III	Ecl. reap..		E	S.E. Eq.	Earn.	10. 47. 10.0	10. 46. 53.5	10. 47. 26.30	8. 23. 40.69	10. 47. 13.1	— 13.20
		Ecl. reap..		H	N.E. Eq.	A ¹	10. 48. 0.0	10. 47. 24.0	10. 47. 56.80	8. 24. 11.10	10. 47. 13.1	— 43.70
29	II	Egress....	First contact	R	S.E. Eq.	Earn.	11. 55. 30.0	11. 55. 13.2	11. 55. 49.11	9. 24. 9.49		
		Egress....	Central bisect	R	S.E. Eq.	Earn.	11. 58. 30.0	11. 58. 13.2	11. 58. 49.11	9. 27. 0.00	12. 3. ...	
		Egress....	Last contact	R	S.E. Eq.	Earn.	12. 1. 30.0	12. 1. 33.2	12. 2. 9.11	9. 30. 19.45		
May 1	I	(i) Shad. ingr.	Disk indented	GBA	12ft. Tel.	{ Pri-vate watch }	8. 19. 30.0			8. 18. 40.00		
		Shad. ingr.	Fully entered	GBA	12ft. Tel.		8. 21. 40.0			8. 20. 50.00	10. 57. ...	
		Satel. egr.	Central bisect	GBA	12ft. Tel.		9. 25. 20.0			9. 24. 30.00	12. 6. ...	
4	III	Ecl. disap.		H	N.E. Eq.	A ¹	11. 55. 10.0	11. 54. 15.0	11. 54. 57.93	9. 3. 29.90	11. 52. 52.0	— 2. 5.93
		Ecl. disap.		E	S.E. Eq.	Earn.	11. 53. 55.0	11. 53. 38.4	11. 54. 21.33	9. 2. 53.40	11. 52. 52.0	— 1. 29.33
6	II	Ingress...	First contact	E	S.E. Eq.	Earn.	12. 19. 30.0	12. 19. 13.5	12. 19. 58.83	9. 20. 34.90		
		Ingress...	Last contact	E	S.E. Eq.	Earn.	12. 22. 10.0	12. 21. 53.5	12. 22. 38.83	9. 23. 14.46	12. 21. ...	
8	I	Ingress...	First contact	E	S.E. Eq.	Earn.	12. 13. 30.0	12. 13. 14.2	12. 14. 1.33	9. 6. 46.56		
		Ingress...	Last contact	E	S.E. Eq.	Earn.	12. 16. 0.0	12. 15. 44.2	12. 16. 31.33	9. 9. 16.15	12. 13. ...	
	II	Ecl. reap..		E	S.E. Eq.	Earn.	12. 27. 50.0	12. 27. 33.2	12. 28. 20.34	9. 21. 3.21	12. 29. 12.8	+ 52.46
		Ecl. reap..		H	N.E. Eq.	A ¹	12. 28. 45.0	12. 28. 10.2	12. 28. 57.34	9. 21. 40.11	12. 29. 12.8	+ 15.46

(a) The satellite was faint, but the observation is pretty good.

(b) and (c) The planet was tremulous, but the observations are pretty good.

(d) Doubtful; the observation probably late, the observer having observed Ceres on the meridian immediately before.

(e) and (i) These observations were made on the grounds of the Magnetic Observatory, with a telescope of 12 feet focal length, and 8 inches aperture of object glass, which the Astronomer Royal was testing. The watch in the latter case was found, by comparison with the Ball Clock, to be 50" fast of mean solar time.

(f) Pretty good.

(g) Cloudy, the belts of the planet not being visible: the observation doubtful.

(h) Doubtful; the planet being clouded and very tremulous.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1848—*continued.*

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instru-ment.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Sidereal Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>m s</small>
Oct. 6	I	(i) Ecl. disap.		R	S. E. Eq.	Earn.	7. 1. 50.0	7. 2. 1.0	7. 2. 40.35	17. 58. 38.44	7. 2. 41.8	+ 1.45
29	I	Ecl. disap.		E	N. E. Eq.	A ¹	8. 42. 2.0	8. 41. 43.0	8. 41. 54.79	18. 7. 10.77	8. 41. 43.6	— 11.19
		Ecl. disap.		R	S. E. Eq.	Earn.	8. 41. 4.0	8. 42. 6.2	8. 42. 17.99	18. 7. 33.91	8. 41. 43.6	— 34.39
Nov. 7	I	Occult. em.	First appear.	E	S. E. Eq.	Earn.	9. 10. 30.0	9. 11. 22.2	9. 11. 50.92	18. 1. 38.83	9. 12. . . .	
		Occult. em.	Totally emer.	E	S. E. Eq.	Earn.	9. 12. 10.0	9. 13. 2.2	9. 13. 30.92	18. 3. 18.55		
14	I	(k) Ecl. disap.		H B	N. E. Eq.	A ¹	8. 0. 9.0	7. 58. 56.8	7. 59. 37.78	16. 22. 6.15	7. 59. 10.3	— 27.48
		(l) Ecl. disap.		H	46in. Ach. {	Hardy Tr. cl. }	. . .	7. 58. 50.0	7. 59. 30.98	16. 21. 59.36	7. 59. 10.3	— 20.68
Dec. 9	I	(m) Ecl. disap.		H B	N. E. Eq.	A ¹	4. 13. 46.0	4. 12. 6.3	4. 12. 34.20	10. 57. 22.02	4. 12. 44.3	+ 10.10
		(n) Ecl. disap.		R	S. E. Eq.	Earn.	4. 13. 2.0	4. 12. 33.6	4. 13. 1.50	10. 57. 49.25	4. 12. 44.3	— 17.20

(i) Difficult on account of the strong daylight.

(l) Cloudy; the observation not good.

(n) Difficult, on account of clouds.

(k) Cloudy.

(m) Thin clouds prevalent; the satellites faint.

OCCULTATIONS of STARS by the MOON.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
Jan. 16	Aldebaran	(a) Reap..	Bright	H B	Alt. & Az.	G 1	^h 0. ^m 9. ^s 10.2	^h 0. ^m 9. 45.96	^h 0. 10. 19.51	^h 4. 29. 20.80
May 7	68 Geminorum.	Disap..	Dark	H B	Alt. & Az.	G 1	13. 33. 36.7	13. 33. 14.97	13. 34. 1.82	10. 30. 29.85
	68 Geminorum.	Disap..	Dark	R	S. E. Eq.	Earn.	13. 33. 31.5	13. 33. 15.00	13. 34. 1.85	10. 30. 29.88
	68 Geminorum.	(b) Reap..	Bright	H B	Alt. & Az.	G 1	14. 9. 28.0	14. 9. 6.70	14. 9. 53.21	11. 6. 15.37
May 11	d Leonis	(c) Reap..	Bright	R	S. E. Eq.	Earn.	16. 4. 15.0	16. 3. 59.60	16. 4. 50.17	12. 45. 9.85
June 6	10 Sextantis...	Disap..	Dark	R	S. E. Eq.	Earn.	16. 13. 32.0	16. 13. 46.60	16. 14. 5.57	11. 12. 10.08
	10 Sextantis...	(d) Disap..	Dark	H B	Alt. & Az.	G 1	16. 13. 4.7	16. 13. 48.20	16. 14. 7.17	11. 12. 11.68
June 13	♂ ² Libræ	(c) Disap..	Dark	E	N. E. Eq.	A ¹	15. 25. 7.0	15. 25. 51.70	15. 26. 18.62	9. 56. 59.58
	♂ ² Libræ	Disap..	Dark	R	S. E. Eq.	Earn.	15. 25. 28.0	15. 25. 49.70	15. 26. 16.62	9. 56. 57.58
July 11	θ Libræ	(f) Disap..	Dark	D	Alt. & Az.	G 1	16. 15. 47.0	16. 15. 18.35	16. 16. 16.50	8. 56. 43.77
	θ Libræ	(g) Disap..	Dark	R	S. E. Eq.	Earn.	16. 15. 21.0	16. 15. 17.80	16. 16. 15.95	8. 56. 43.22
	θ Libræ	(h) Disap..	Dark	M	{ Finding Tel. } of S. E. Eq.	Earn.	16. 15. 21.0	16. 15. 17.80	16. 16. 15.95	8. 56. 43.22
	θ Libræ	(i) Reap..	Bright	R	S. E. Eq.	Earn.	16. 48. 42.0	16. 48. 38.80	16. 49. 37.21	9. 29. 59.01
	θ Libræ	Reap..	Bright	J H	N. E. Eq.	A ¹	16. 49. 43.5	16. 48. 41.30	16. 49. 39.71	9. 30. 1.51
Aug. 21	γ Tauri	(k) Disap..	Bright	M	S. E. Eq.	Earn.	21. 27. 36.0	21. 28. 12.00	21. 28. 59.38	11. 27. 23.15
	γ Tauri	(l) Disap..	Bright	D	Alt. & Az.	G 1	21. 28. 48.5	21. 28. 14.15	21. 29. 1.53	11. 27. 25.29
	γ Tauri	(m) Reap..	Dark	M	S. E. Eq.	Earn.	22. 18. 29.7	22. 19. 5.70	22. 19. 53.11	12. 18. 8.54
	γ Tauri	(n) Reap..	Dark	D	Alt. & Az.	G 1	22. 19. 39.8	22. 19. 5.56	22. 19. 52.97	12. 18. 8.40
Aug. 22	111 Tauri	Disap..	Bright	R	S. E. Eq.	Earn.	0. 7. 21.0	0. 7. 56.50	0. 8. 45.19	14. 2. 46.87
	111 Tauri	Disap..	Bright	E	N. E. Eq.	A ¹	0. 9. 5.5	0. 7. 48.80	0. 8. 37.49	14. 2. 39.20
	*	Reap..	Dark	E	N. E. Eq.	A ¹	0. 58. 29.0	0. 57. 12.30	0. 58. 1.03	14. 51. 54.65
	111 Tauri	Reap..	Dark	R	S. E. Eq.	Earn.	0. 58. 31.0	0. 59. 6.50	0. 59. 55.23	14. 53. 48.53
Sep. 15	ξ ¹ Ceti	(o) Disap..	Bright	R	S. E. Eq.	Earn.	1. 52. 13.0	1. 52. 8.80	1. 52. 22.93	14. 11. 45.89
	ξ ¹ Ceti	Reap..	Dark	R	S. E. Eq.	Earn.	2. 43. 4.0	2. 42. 59.80	2. 43. 13.96	15. 2. 28.59
	ξ ¹ Ceti	(p) Reap..	Dark	H B	N. E. Eq.	A ¹	2. 43. 29.0	2. 43. 0.70	2. 43. 14.86	15. 2. 29.48
Nov. 9	ξ ¹ Ceti	(q) Disap..	Dark	R	46 Inch Tel.	Transit	2. 36. 25.0	2. 36. 25.00	2. 36. 56.99	11. 19. 57.77
	ξ ¹ Ceti	(r) Disap..	Dark	E	N. E. Eq.	A ¹	2. 37. 16.0	2. 36. 23.00	2. 36. 54.99	11. 19. 55.77

(a) Very good: the emersion appeared instantaneous: the time is probably true to 0th.1.

(b) Doubtful.

(c) Very faint: the air hazy.

(d) Satisfactory.

(e) Very faint.

(f) Very good: the star disappeared instantaneously at the clock-beat.

(g) Good.

(h) Perhaps a small portion of a second later.

(i) Faint, owing to the brightness of the limb, but the observation is not bad.

(k) The limb very unsteady and deeply serrated: a small uncertainty from this cause.

(l) The Moon's limb tremulous, but the observation is not bad.

(m) Good: the unilluminated portion (about half) of the Moon was distinctly visible, and the star appeared instantaneously exactly on the border.

(n) Very good.

(o) Doubtful to two seconds, on account of the brightness of the Moon's limb.

(p) Good.

(q) Uncertain to one second or two seconds, the star being among the mountainous inequalities near the Moon's border; the Moon was also very nearly full.

(r) Rather doubtful, the star disappearing at the rugged edge of the Moon, amongst some small illuminated spots.

Reappearance of Aldebaran, 1848, January 16, $4^h.29^m.20^s.8 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$2.34.52.65$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$66.23.47.40$	$+ x$	$+ 0.6032$	$\times t$
Moon's N. P. D.	$72.55.47.98$	$+ y$	$- 0.0717$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$58.41.93$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$15.59.78$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$66.48.22.80$	$+ e''$		
Star's N. P. D.....	$73.48.11.60$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$66.13.54.68$	$+ e$	$+ 0.0688 \times t$	$- 2.0681 \times m$
Geocentric N. P. D. of corresponding point	$73.8.47.18$	$+ f$	$+ 0.0397 \times t$	$- 2.3644 \times m$

Geocentric distance of center from corresponding point,

$$16.3.62 + 0.5626 \times \left\{ -e + x + 0.5345 \times t + 2.0681 \times m \right\} \\ + 0.8087 \times \left\{ f + 0.0397 \times t - 2.3644 \times m \right\} \\ - 0.8083 \times \left\{ y - 0.0717 \times t \right\}$$

Final Equation.

$$-3''.84 = -0.5626 \times e + 0.8087 \times f + 0.5626 \times x - 0.8083 \times y + 0.3908 \times t - 0.7486 \times m - 0.9598 \times n$$

Disappearance of 68 Geminorum, 1848, May 7, $10^h.30^m.29^s.88 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$203.30.27.75$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$111.43.32.85$	$+ x$	$+ 0.5892$	$\times t$
Moon's N. P. D.	$72.53.44.45$	$+ y$	$+ 0.0663$	$\times t$
Moon's Horizontal Equatoreal Parallax	$58.2.97$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$15.49.07$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$111.14.1.20$	$+ e''$		
Star's N. P. D.	$73.51.15.90$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$111.51.50.90$	$+ e$	$- 0.0080 \times t$	$- 2.2697 \times m$
Geocentric N. P. D. of corresponding point	$73.7.29.89$	$+ f$	$- 0.0426 \times t$	$- 2.6260 \times m$

Geocentric distance of center from corresponding point,

$$15.53.01 + 0.4781 \times \left\{ +e - x - 0.5972 \times t - 2.2697 \times m \right\} \\ + 0.8664 \times \left\{ f - 0.0426 \times t - 2.6260 \times m \right\} \\ - 0.8660 \times \left\{ y + 0.0663 \times t \right\}$$

Final Equation.

$$-3''.94 = +0.4781 \times e + 0.8664 \times f - 0.4781 \times x - 0.8660 \times y - 0.3798 \times t - 3.3603 \times m - 0.9491 \times n$$

Reappearance of 68 Geminorum, 1848, May 7, 11^h. 6^m. 15^s.37 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.	212. 28. 18.15	"	+	15.0	$\times t$
Moon's Right Ascension in arc.	112. 4. 37.65	+	x	+	0.5892 $\times t$
Moon's N. P. D.	72. 56. 6.02	+	y	+	0.0663 $\times t$
Moon's Horizontal Equatoreal Parallax.	58. 1.54	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.	15.48.68	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.	111. 14. 1.20	+	e''		
Star's N. P. D.	73. 51. 15.90	+	f		
Geocentric R. A. of corresponding point in arc.	111. 51. 8.58	+	e	- 0.0323 $\times t$	+ 2.2274 $\times m$
Geocentric N. P. D. of corresponding point.	73. 5.57.00	+	f	- 0.0415 $\times t$	- 2.7189 $\times m$

Geocentric distance of center from corresponding point,

$$16. 13.65 + 0.7600 \times \left\{ -e + x + 0.6215 \times t - 2.2274 \times m \right\} \\ + 0.6075 \times \left\{ f - 0.0415 \times t - 2.7189 \times m \right\} \\ - 0.6065 \times \left\{ y + 0.0663 \times t \right\}$$

Final Equation.

$$-24''.97 = -0.7600 \times e + 0.6075 \times f + 0.7600 \times x - 0.6065 \times y + 0.4069 \times t - 3.3445 \times m - 0.9487 \times n$$

Reappearance of δ Leonis, 1848, May 11, 12^h. 45^m. 9^s.85 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.	241. 12. 32.55	"	+	15.0	$\times t$
Moon's Right Ascension in arc.	163. 56. 41.25	+	x	+	0.4851 $\times t$
Moon's N. P. D.	84. 42. 50.21	+	y	+	0.1529 $\times t$
Moon's Horizontal Equatoreal Parallax.	54. 53. 36	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.	14. 57. 44	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.	163. 10. 57.60	+	e''		
Star's N. P. D.	85. 34. 15.90	+	f		
Geocentric R. A. of corresponding point in arc.	163. 44. 36.36	+	e	+ 0.0284 $\times t$	+ 2.0188 $\times m$
Geocentric N. P. D. of corresponding point.	84. 52. 12.50	+	f	- 0.0105 $\times t$	- 2.5234 $\times m$

Geocentric distance of center from corresponding point,

$$15. 15.04 + 0.7858 \times \left\{ -e + x + 0.4567 \times t - 2.0188 \times m \right\} \\ + 0.6147 \times \left\{ f - 0.0105 \times t - 2.5234 \times m \right\} \\ - 0.6145 \times \left\{ y + 0.1529 \times t \right\}$$

Final Equation.

$$-17''.60 = -0.7858 \times e + 0.6147 \times f + 0.7858 \times x - 0.6145 \times y + 0.2588 \times t - 3.1375 \times m - 0.8974 \times n$$

Reappearance of 10 Sextantis, 1848, June 6, 11^h. 12^m. 11^s.68 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	243. 31. 47.55	"	+	15.0	× t
Moon's Right Ascension in arc	147. 25. 46.95	+ x	+	0.5249	× t
Moon's N. P. D.	79. 36. 39.73	+ y	+	0.1407	× t
Moon's Horizontal Equatoreal Parallax.....	56. 21. 83	× $\left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	15. 21. 55	× $\left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	147. 5. 46.50	+ e''			
Star's N. P. D.	80. 21. 1.00	+ f			
Geocentric R. A. of corresponding point in arc. ...	147. 41. 18.62	+ e	-	0.0174 × t + 2.1321 × m	
Geocentric N. P. D. of corresponding point	79. 37. 6.94	+ f	-	0.0235 × t - 2.6341 × m	

Geocentric distance of center from corresponding point,

$$15.16.81 + 0.9831 \times \left\{ + e - x - 0.5423 \times t + 2.1321 \times m \right\} \\ + 0.0301 \times \left\{ f - 0.0235 \times t - 2.6341 \times m \right\} \\ - 0.0293 \times \left\{ y + 0.1407 \times t \right\}$$

Final Equation.

$$+ 4''.74 = + 0.9831 \times e + 0.0301 \times f - 0.9831 \times x - 0.0293 \times y - 0.5379 \times t + 2.0168 \times m - 0.9216 \times n$$

Disappearance of ϵ^2 Libræ, 1848, June 13, 9^h. 56^m. 59^s.58 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	231. 34. 39.30	"	+	15.0	× t
Moon's Right Ascension in arc.....	228. 26. 6.15	+ x	+	0.4996	× t
Moon's N. P. D.	103. 49. 10.45	+ y	+	0.1061	× t
Moon's Horizontal Equatoreal Parallax.....	54. 12. 18	× $\left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter.....	14. 46. 25	× $\left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc.....	228. 39. 3.15	+ e''			
Star's N. P. D.	104. 35. 1.40	+ f			
Geocentric R. A. of corresponding point in arc....	228. 40. 49.83	+ e	+	0.1483 × t + 0.1067 × m	
Geocentric N. P. D. of corresponding point.....	103. 45. 40.03	+ f	+	0.0021 × t - 2.9614 × m	

Geocentric distance of center from corresponding point,

$$14.43.63 + 0.9436 \times \left\{ + e - x - 0.3513 \times t + 0.1067 \times m \right\} \\ - 0.2386 \times \left\{ f + 0.0021 \times t - 2.9614 \times m \right\} \\ + 0.2376 \times \left\{ y + 0.1061 \times t \right\}$$

Final Equation.

$$+ 2''.62 = + 0.9436 \times e - 0.2386 \times f - 0.9436 \times x + 0.2376 \times y - 0.3068 \times t + 0.8073 \times m - 0.8863 \times n$$

Disappearance of θ Libræ, 1848, July 11, $8^h.56^m.43^s.77 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$244. 4. 7.50$	$'' + 15.0$	$\times t$
Moon's Right Ascension in arc	$236.20.36.90$	$+ x + 0.5083$	$\times t$
Moon's N. P. D.	$105.11.55.70$	$+ y + 0.0917$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$54.25.79$	$\times \left(1 + \frac{m}{1000}\right)$	
Moon's Semidiameter	$14.49.95$	$\times \left(1 + \frac{n}{1000}\right)$	
Star's Right Ascension in arc	$236.18.20.25$	$+ e''$	
Star's N. P. D.	$106.16.41.50$	$+ f$	
Geocentric R. A. of corresponding point in arc....	$236.23. 5.87$	$+ e + 0.1490 \times t + 0.2856 \times m$	
Geocentric N. P. D. of corresponding point	$105.26.34.02$	$+ f + 0.0059 \times t - 3.0075 \times m$	

Geocentric distance of center from corresponding point,

$$14.50.00 + 0.1557 \times \left\{ + e - x - 0.3593 \times t + 0.2856 \times m \right\} \\ + 0.9870 \times \left\{ f + 0.0059 \times t - 3.0075 \times m \right\} \\ - 0.9870 \times \left\{ y + 0.0917 \times t \right\}$$

Final Equation.

$$- 0''.05 = + 0.1557 \times e + 0.9870 \times f - 0.1557 \times x - 0.9870 \times y - 0.1406 \times t - 2.9239 \times m - 0.8900 \times n$$

Reappearance of θ Libræ, 1848, July 11, $9^h.29^m.59^s.01 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$252.24.18.15$	$'' + 15.0$	$\times t$
Moon's Right Ascension in arc	$236.37.31.35$	$+ x + 0.5083$	$\times t$
Moon's N. P. D.	$105.14.57.13$	$+ y + 0.0917$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$54.26.14$	$\times \left(1 + \frac{m}{1000}\right)$	
Moon's Semidiameter	$14.50.04$	$\times \left(1 + \frac{n}{1000}\right)$	
Star's Right Ascension in arc	$236.18.20.25$	$+ e''$	
Star's N. P. D.	$106.16.41.50$	$+ f$	
Geocentric R. A. of corresponding point in arc....	$236.28. 6.69$	$+ e + 0.1449 \times t + 0.5864 \times m$	
Geocentric N. P. D. of corresponding point.....	$105.26.50.70$	$+ f + 0.0114 \times t - 2.9908 \times m$	

Geocentric distance of center from corresponding point,

$$14.57.60 + 0.5849 \times \left\{ - e + x + 0.3634 \times t - 0.5864 \times m \right\} \\ + 0.7947 \times \left\{ f + 0.0114 \times t - 2.9908 \times m \right\} \\ - 0.7951 \times \left\{ y + 0.0917 \times t \right\}$$

Final Equation.

$$- 7''.56 = - 0.5849 \times e + 0.7947 \times f + 0.5849 \times x - 0.7951 \times y + 0.1487 \times t - 2.7198 \times m - 0.8900 \times n$$

Disappearance of γ Tauri, 1848, August 21, $11^h.27^m.25^s.29 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$322.15.22.95$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$61.55.39.00$	$+ x$	$+ 0.6032$	$\times t$
Moon's N. P. D.	$74.6.39.74$	$+ y$	$- 0.0943$	$\times t$
Moon's Horizontal Equatoreal Parallax	$59.6.47$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.6.40$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$62.47.43.65$	$+ e''$		
Star's N. P. D.	$74.44.39.80$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$62.9.59.83$	$+ e$	$- 0.0311 \times t$	$- 2.2639 \times m$
Geocentric N. P. D. of corresponding point.....	$73.58.31.97$	$+ f$	$+ 0.0040 \times t$	$- 2.7678 \times m$

Geocentric distance of center from corresponding point,

$$16.0.62 + 0.8283 \times \left\{ + e - x - 0.6343 \times t - 2.2639 \times m \right\} \\ - 0.5072 \times \left\{ f + 0.0040 \times t - 2.7678 \times m \right\} \\ + 0.5082 \times \left\{ y - 0.0943 \times t \right\}$$

Final Equation.

$$+ 5''.78 = + 0.8283 \times e - 0.5072 \times f - 0.8283 \times x + 0.5082 \times y - 0.5753 \times t - 0.4714 \times m - 0.9664 \times n$$

Reappearance of γ Tauri, 1848, August 21, $12^h.18^m.8^s.40 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$334.58.14.55$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$62.26.15.45$	$+ x$	$+ 0.6035$	$\times t$
Moon's N. P. D.	$74.1.57.43$	$+ y$	$- 0.0926$	$\times t$
Moon's Horizontal Equatoreal Parallax	$59.5.89$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.6.24$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$62.47.43.65$	$+ e''$		
Star's N. P. D.	$74.44.39.80$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$62.9.23.39$	$+ e$	$+ 0.0038 \times t$	$- 2.3003 \times m$
Geocentric N. P. D. of corresponding point.....	$74.0.41.22$	$+ f$	$+ 0.0407 \times t$	$- 2.6386 \times m$

Geocentric distance of center from corresponding point,

$$16.15.94 + 0.9585 \times \left\{ - e + x + 0.5997 \times t + 2.3003 \times m \right\} \\ - 0.7802 \times \left\{ f + 0.0407 \times t - 2.6386 \times m \right\} \\ + 0.7816 \times \left\{ y - 0.0926 \times t \right\}$$

Final Equation.

$$- 9''.70 = - 0.9585 \times e - 0.7802 \times f + 0.9585 \times x + 0.7816 \times y + 0.4706 \times t + 4.2634 \times m - 0.9662 \times n$$

Disappearance of 111 Tauri, 1848, August 22, 14^h. 2^m. 46^s. 87 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	2. 11. 17. 85	"	+	15. 0	× t
Moon's Right Ascension in arc	78. 3. 47. 85	+	x	+	0. 6091 × t
Moon's N. P. D.	72. 15. 19. 15	+	y	-	0. 0453 × t
Moon's Horizontal Equatoreal Parallax.....	58. 46. 20	×	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16. 0. 93	×	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	78. 53. 31. 05	+	e''		
Star's N. P. D.	72. 45. 50. 40	+	f		
Geocentric R. A. of corresponding point in arc....	78. 16. 0. 17	+	e	+	0. 0347 × t - 2. 2509 × m
Geocentric N. P. D. of corresponding point	72. 4. 41. 19	+	f	+	0. 0463 × t - 2. 4692 × m

Geocentric distance of center from corresponding point,

$$15. 44. 98 + 0. 7023 \times \left\{ + e - x - 0. 5744 \times t - 2. 2509 \times m \right\} \\ - 0. 6748 \times \left\{ f + 0. 0463 \times t - 2. 4692 \times m \right\} \\ + 0. 6756 \times \left\{ y - 0. 0453 \times t \right\}$$

Final Equation.

$$+ 15''. 95 = + 0. 7023 \times e - 0. 6748 \times f - 0. 7023 \times x + 0. 6756 \times y - 0. 4652 \times t + 0. 0854 \times m - 0. 9609 \times n$$

Reappearance of 111 Tauri, 1848, August 22, 14^h. 53^m. 48^s. 53 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	14. 53. 48. 45	"	+	15. 0	× t
Moon's Right Ascension in arc	78. 34. 52. 65	+	x	+	0. 6091 × t
Moon's N. P. D.	72. 13. 3. 17	+	y	-	0. 0434 × t
Moon's Horizontal Equatoreal Parallax.....	58. 45. 49	×	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16. 0. 74	×	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	78. 53. 31. 05	+	e''		
Star's N. P. D.	72. 45. 50. 40	+	f		
Geocentric R. A. of corresponding point in arc....	78. 18. 54. 75	+	e	+	0. 0694 × t - 2. 0763 × m
Geocentric N. P. D. of corresponding point.....	72. 6. 57. 99	+	f	+	0. 0412 × t - 2. 3324 × m

Geocentric distance of center from corresponding point,

$$16. 22. 28 + 0. 8835 \times \left\{ - e + x + 0. 5397 \times t + 2. 0763 \times m \right\} \\ - 0. 3711 \times \left\{ f + 0. 0412 \times t - 2. 3324 \times m \right\} \\ + 0. 3725 \times \left\{ y - 0. 0434 \times t \right\}$$

Final Equation.

$$- 21''. 54 = - 0. 8835 \times e - 0. 3711 \times f + 0. 8835 \times x + 0. 3725 \times y + 0. 4453 \times t + 2. 7000 \times m - 0. 9607 \times n$$

Disappearance of ξ^1 Ceti, 1848, Sep. 15, $14^h. 11^m. 45^s.89 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$28. 5. 43.95$	$''$	$''$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$30. 57. 51.75$	$+ x$	$''$	$''$	$+ 0.5968$	$\times t$
Moon's N. P. D.	$81. 4. 7.52$	$+ y$	$''$	$''$	$- 0.1689$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 20.57$	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	$16. 26.56$	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in arc	$31. 15. 2.40$	$+ e''$				
Star's N. P. D.	$81. 51. 55.50$	$+ f$				
Geocentric R. A. of corresponding point in arc....	$31. 12. 56.54$	$+ e$	$''$	$''$	$+ 0.1607 \times t - 0.1259 \times m$	
Geocentric N. P. D. of corresponding point	$81. 10. 43.65$	$+ f$	$''$	$''$	$+ 0.0010 \times t - 2.4719 \times m$	

Geocentric distance of center from corresponding point,

$$16. 17.79 + 0.9032 \times \left\{ + e - x - 0.4361 \times t - 0.1259 \times m \right\} \\ + 0.4054 \times \left\{ f + 0.0010 \times t - 2.4719 \times m \right\} \\ - 0.4048 \times \left\{ y - 0.1689 \times t \right\}$$

Final Equation.

$$+ 8''.77 = + 0.9032 \times e + 0.4054 \times f - 0.9032 \times x - 0.4048 \times y - 0.3251 \times t - 1.1158 \times m - 0.9866 \times n$$

Reappearance of ξ^1 Ceti, 1848, Sep. 15, $15^h. 2^m. 28^s.59 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$40. 48. 29.40$	$''$	$''$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$31. 28. 8.55$	$+ x$	$''$	$''$	$+ 0.5972$	$\times t$
Moon's N. P. D.	$80. 55. 35.35$	$+ y$	$''$	$''$	$- 0.1679$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 20.34$	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	$16. 26.49$	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in arc	$31. 15. 2.40$	$+ e''$				
Star's N. P. D.	$81. 51. 55.50$	$+ f$	$''$	$''$		
Geocentric R. A. of corresponding point in arc....	$31. 21. 22.04$	$+ e$	$''$	$''$	$+ 0.1584 \times t + 0.3796 \times m$	
Geocentric N. P. D. of corresponding point	$81. 10. 39.86$	$+ f$	$''$	$''$	$- 0.0041 \times t - 2.4756 \times m$	

Geocentric distance of center from corresponding point,

$$16. 29.64 + 0.4008 \times \left\{ - e + x + 0.4388 \times t - 0.3796 \times m \right\} \\ + 0.9140 \times \left\{ f - 0.0041 \times t - 2.4756 \times m \right\} \\ - 0.9138 \times \left\{ y - 0.1679 \times t \right\}$$

Final Equation.

$$- 3''.15 = - 0.4008 \times e + 0.9140 \times f + 0.4008 \times x - 0.9138 \times y + 0.3255 \times t - 2.4148 \times m - 0.9865 \times n$$

Disappearance of ξ^1 Ceti, 1848, Nov. 9, $11^h.19^m.57^s.8 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$39.14.14.85$	$''$	$+$	15.0	$\times t$
Moon's Right Ascension in arc.....	$31.7.21.15$	$+$	x	$+$	$0.6150 \times t$
Moon's N. P. D.	$80.59.45.41$	$+$	y	$-$	$0.1768 \times t$
Moon's Horizontal Equatoreal Parallax	$61.9.11$	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.39.81$	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$31.15.11.10$	$+$	e''		
Star's N. P. D.	$81.51.54.00$	$+$	f		
Geocentric R. A. of corresponding point in arc....	$31.20.32.98$	$+$	e	$+$	$0.1617 \times t + 0.3219 \times m$
Geocentric N. P. D. of corresponding point.....	$81.10.6.41$	$+$	f	$-$	$0.0034 \times t - 2.5076 \times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &16.38.78 + 0.7736 \times \left\{ + e - x - 0.4533 \times t + 0.3219 \times m \right\} \\
 &+ 0.6219 \times \left\{ f - 0.0034 \times t - 2.5076 \times m \right\} \\
 &- 0.6215 \times \left\{ y - 0.1768 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 1''.03 = + 0.7736 \times e + 0.6219 \times f - 0.7736 \times x - 0.6215 \times y - 0.2429 \times t - 1.3105 \times m - 0.9998 \times n$$

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF DISTANCE AND ANGLE OF POSITION

OF THE

COMPONENTS OF γ VIRGINIS,

AND OF THE

DIAMETERS OF PLANETS,

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE SOUTH-EAST EQUATOREAL.

1848.

RESULTS of MEASURES of DISTANCE and ANGLE of POSITION of the COMPONENTS of γ VIRGINIS, made at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the South-East Equatoreal.

γ VIRGINIS. $\left\{ \begin{array}{l} \text{R. A.} = 12^{\text{h}}.34^{\text{m}}. \\ \text{N. P. D.} = 90^{\circ}.37'. \end{array} \right.$

Day and Mean Solar Hour.	Observed Distance.	Method of Observation.	Number of Measures.	Observed Angle of Position.	Number of Measures.	Observer.	Remarks.
June ^d 6. ^h 9	2.65	Equal distances.	12	180.16	1	M	The stars tolerably steady, and the measures good: the position is tolerably well determined.
	2.79	Equal distances.	12	...	..	H B	
July 11. 9	2.55	Equal distances.	10	180.45	1	M	The stars were in violent motion.

MEASURES of the DIAMETERS of JUPITER, SATURN, and URANUS, made at the Royal Observatory, Greenwich, 1848, with a Double-Image Micrometer on the South-East Equatoreal.

JUPITER.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from Struve's Elements.	Apparent Error of Struve's Elements.	Approximate Angle of Position of measured part.	Observer.	Remarks.
Feb. ^d 1. ^h 9	Equatoreal diameter.	8	46.19	45.95	-0.24	94	R	The planet ill defined, and the observation not good. Correction for phase of equatoreal diameter = 0".10. $\epsilon = \frac{1}{31.2}$
	Polar diameter.....	8	44.71	42.60	-2.11	184		
Feb. 3. 10	Equatoreal diameter.	10	45.23	45.76	+0.53	95	R	Correction for phase of equatoreal diameter = 0".11. $\epsilon = \frac{1}{22.4}$
	Polar diameter.....	10	43.21	42.43	-0.78	185		
Feb. 18. 9	Equatoreal diameter.	10	43.49	44.16	+0.67	96	R	Correction for phase of equatoreal diameter = 0".22. $\epsilon = \frac{1}{18.8}$
	Polar diameter.....	10	41.17	40.95	-0.22	186		
Mar. 7. 9	Equatoreal diameter.	10	41.28	41.89	+0.61	96	R	The planet tremulous. Correction for phase of equatoreal diameter = 0".31. $\epsilon = \frac{1}{20.2}$
	Polar diameter.....	10	39.24	38.84	-0.40	186		
Mar. 14. 9	Equatoreal diameter.	10	40.41	40.97	+0.56	94	R	The planet faint, but steady. Correction for phase of equatoreal diameter = 0".34. $\epsilon = \frac{1}{21.3}$
	Polar diameter.....	10	38.51	37.99	-0.52	184		

MEASURES of the DIAMETERS of SATURN, made at the Royal Observatory, Greenwich, 1848.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Approximate Angle of Position of measured part.	Observer.	Remarks.
Sep. 4. 10 ^{d h}	Equatoreal diameter	10	19° 82	76	M	The measures tolerably good : the ring not seen. $\epsilon = \frac{1}{8.97}$
	Polar diameter	10	17° 61	346		
Sep. 6. 10	Equatoreal diameter	10	19° 86	90	M	The measures good : the angle of position more accurate than on September 4. The ring was visible. $\epsilon = \frac{1}{8.21}$
	Polar diameter	10	17° 44	0		
Sep. 18. 9	Equatoreal diameter	10	19° 53	91	M	$\epsilon = \frac{1}{8.72}$
	Polar diameter	10	17° 29	1		
Sep. 19. 9	Equatoreal diameter	10	19° 35	90	M	The planet very steady and well defined : the measures good. $\epsilon = \frac{1}{9.97}$
	Polar diameter	10	17° 41	180		
	Inclined diameter	10	18° 68	135		
Sep. 20. 9	Equatoreal diameter	10	19° 23	90	M	Rather cloudy and foggy : brighter at the measures of the other diameters. $\epsilon = \frac{1}{8.90}$
	Polar diameter	10	17° 07	0		
	Inclined diameter	10	17° 95	45		
	Inclined trans. diameter . .	10	18° 36	135		
	Polar diameter	10	17° 17	0		
Sep. 22. 10	Equatoreal diameter	10	19° 43	94	M	The planet disfigured. The planet was distinct and the measures better. $\epsilon = \frac{1}{8.16}$
	Polar diameter	10	17° 05	4		
	Inclined diameter	10	18° 22	49		
	Inclined trans. diameter . .	12	18° 22	139		
Oct. 5. 8	Equatoreal diameter	10	19° 41	94	M	Correction for phase of equatoreal diameter applied to the observed diameter = 0''·01. $\epsilon = \frac{1}{7.83}$
	Polar diameter	10	16° 93	4		
	Inclined diameter	10	17° 80	49		
	Inclined trans. diameter . .	10	18° 05	139		
Oct. 9. 10	Equatoreal diameter	8	18° 91	94	M	The planet blurred. Correction for phase of equatoreal diameter = 0''·01. $\epsilon = \frac{1}{8.88}$
	Polar diameter	10	16° 78	4		

MEASURES of the DIAMETERS of SATURN, made at the Royal Observatory, Greenwich, 1848—continued.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Approximate Angle of Position of measured part.	Observer.	Remarks.
Oct. 9. 10 ^{d h}	Inclined diameter	10	17'·92	49°	M	
	Inclined trans. diameter..	10	17'·87	139		
Oct. 25. 9	Equatoreal diameter	10	18'·81	89	M	The circumstances of observation good.
	Polar diameter	10	16'·69	359		$\epsilon = \frac{1}{8\cdot87}$
	Inclined diameter	10	17'·49	44		Correction for phase of equatoreal diameter = 0''·02.
	Inclined trans. diameter..	10	17'·94	134		
Nov. 15. 8	Equatoreal diameter	10	17'·96	91	M	These observations and those on Nov. 21 were made with Mr. Alry's improved double-image micrometer. The air was misty, but the planet was steady.
	Polar diameter	10	16'·21	1		$\epsilon = \frac{1}{11\cdot09}$
	Inclined diameter	10	17'·03	46		
	Inclined trans. diameter..	10	17'·36	136		Correction for phase of equatoreal diameter = 0''·04.
Nov. 21. 8	Equatoreal diameter	10	18'·01	91	M	The sky very clear: a brilliant aurora visible.
	Polar diameter	12	16'·23	1		$\epsilon = \frac{1}{10\cdot33}$
	Inclined diameter	10	17'·04	46		
	Inclined trans. diameter..	10	17'·33	136		Correction for phase of equatoreal diameter = 0''·04.

URANUS.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from N.A.	Apparent Error of Nautical Almanac	Observed Angle of Position.	Observer.	Remarks.
Oct. 25. 9 ^{d h}	Diameter	8	3'·67	4'·00	+0'·33	90°	M	A larger telescope is required to measure Uranus satisfactorily. [M.]
	Diameter	8	3'·33	4'·00	+0'·67	0		
Oct. 28. 9	Diameter	12	3'·57	4'·00	+0'·43	90	M	
	Diameter	12	3'·35	4'·00	+0'·65	0		



RESULTS

OF THE

ASTRONOMICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1849.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1849.)



ROYAL OBSERVATORY, GREENWICH.

C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

FOR 1849, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1849,

WITH THE ANNUAL VARIATIONS:

ALSO,

NEW CONSTANTS FOR STARS INCLUDED IN THE CATALOGUE,

NOT OBSERVED IN PRECEDING YEARS.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, JAN. 1, 1849,
OF STARS OBSERVED IN THE YEAR 1849; WITH THE ANNUAL VARIATIONS.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
1	B. A. C. 2.....	2	0·89	^h 0. 0. 22·42	+3·072			124. 22.	"			"	"
2	α Andromedæ	26	0·73	0. 0. 35·54	3·083	20		61. 44. 34·11		20	0·71	34·11	-19·910
3	β Cassiopeiæ.....			0. 1. (10)		8		31. 40. 59·95		8	0·92	59·95	19·885
4	γ Pegasi.....	28	0·83	0. 5. 27·92	3·082	22		75. 39. 20·48		22	0·82	20·48	20·038
5	θ Andromedæ.....	2	0·79	0. 9. 12·68	3·111			52. 9.					
6	13 Cassiopeiæ.....	3	0·80	0. 22. 47·07	3·401			24. 19.					
7	Groombridge 86 ..	4	0·82	0. 24. 28·11	3·262			36. 43.					
8	Groombridge 96 ..	3	0·82	0. 27. 6·48	3·283			36. 38.					
9	B. A. C. 146.....	4	0·82	0. 27. 45·72	3·294			36. 40.					
10	ζ Cassiopeiæ.....	2	0·98	0. 28. 35·16	3·299	9		36. 56. 5·89		9	0·92	5·89	19·909
11	δ Andromedæ.....	3	0·95	0. 31. 15·86	3·187	3		59. 57. 56·93		3	0·91	56·93	19·757
12	*	1	0·97	0. 31. 51·28	3·344			34. 17.					
13	α Cassiopeiæ.....	14	0·79	0. 31. 58·23	3·350	13		34. 17. 29·25		13	0·75	29·25	19·822
14	β Ceti.....	20	0·87	0. 36. 0·41	3·013	15		108. 48. 58·24		15	0·88	58·24	19·836
15	B. A. C. 205.....	3	0·83	0. 37. 43·02	3·056			95. 27.					
16	η Cassiopeiæ.....	1	0·95	0. 39. 59·78	3·563	6		32. 59. 11·76		6	0·93	11·76	19·269
17	B. A. C. 221.....	5	0·85	0. 40. 28·03	3·128	5		85. 29. 47·63		5	0·85	47·63	18·561
18	δ Piscium.....	3	0·90	0. 40. 51·07	3·107	3		83. 14. 12·52		3	0·58	12·52	19·726
19	20 Ceti.....	4	0·83	0. 45. 17·57	3·064	1		91. 57. 53·76		1	0·82	53·76	19·653
20	B. A. C. 245.....	3	0·84	0. 46. 31·80	3·369			42. 8.					
21	Weisse 0. 907			0. 51. (50)		3		92. 0. 41·56		3	0·91	41·56	19·543
22	ε Piscium.....	1	0·00	0. 55. 6·74	3·116	1		82. 55. 24·50		1	0·00	24·50	19·497
23	Weisse 0. 976	3	0·87	0. 55. 22·80	3·010			100. 40.					
24	*	1	0·34	1. 4. 18·39	17·209			1. 30.					
25	Polaris.....	94	0·56	1. 4. 43·86	17·482	23		1. 29. 43·94		48	0·57	43·83	19·277
	Polaris S. P.					21	4	43·87	42·99				
26	*			1. 9. (10)		3		52. 33. 36·08		3	0·92	36·08	19·148
27	f Piscium.....	5	0·85	1. 10. 0·90	3·090	5		87. 10. 54·62		5	0·85	54·62	19·116
28	δ Cassiopeiæ.....			1. 16. (0)		4		30. 33. 5·47		4	0·92	5·47	18·922
29	44 Ceti.....			1. 16. (30)		4		98. 47. 40·99		4	0·85	40·99	19·002
30	θ Ceti.....	20	0·74	1. 16. 28·60	3·000	9		98. 57. 49·94		9	0·88	49·94	18·748
31	A Cassiopeiæ.....	3	0·86	1. 20. 4·86	4·323			20. 31.					
32	Weisse I. 343.....	3	0·94	1. 20. 16·19	3·048			92. 46.					
33	Weisse I. 346.....	4	0·92	1. 20. 20·14	3·048			92. 49.					
34	μ Piscium.....	5	0·62	1. 22. 16·70	3·137	3		84. 38. 10·22		3	0·50	10·22	18·596
35	*			1. 25. (40)		3		84. 12. 36·94		3	0·96	36·94	18·670
36	Weisse I. 452.....	2	0·95	1. 26. 8·98	3·086			88. 13.					
37	Weisse I. 467.....			1. 26. (50)		3		84. 11. 17·85		3	0·95	17·85	18·632
38	B. A. C. 472.....	1	0·00	1. 27. 1·99	3·072			89. 49.					
39	B. A. C. 474.....	3	0·94	1. 27. 14·95	3·617			42. 3.					
40	51 Andromedæ....	1	0·97	1. 28. 44·98	3·639	3		42. 8. 18·57		3	0·95	18·57	18·449
41	B. A. C. 490.....			1. 29. (40)		3		78. 41. 34·97		3	0·88	34·97	18·539
42	ω Cassiopeiæ.....	3	0·94	1. 31. 13·86	4·315			22. 43.					
43	Weisse I. 564.....			1. 32. (0)		3		93. 17. 8·42		3	0·92	8·42	18·461
44	ν Piscium.....	3	0·55	1. 33. 34·60	+3·117	2		85. 16. 42·56		2	0·34	42·56	18·386
45	54 Andromedæ....			1. 34. (10)		6		40. 4. 27·24		6	0·94	27·24	-18·355

8. Of the 6·7th magnitude.

26, 35. Of the 8·9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
46	τ Ceti.....			^h ^m ^s 1. 37.(0)		3		106. 44. 2.54	"	3	0.96	2.54	-19.155
47	\circ Piscium.....	1	0.82	1. 37. 25.53	+3.162	1		81. 36. 15.55		1	0.82	15.55	18.310
48	Lalande.. {3230 3231}	1	0.99	1. 38. 6.43	3.096			87. 20.					
49	ϵ Sculptoris.....			1. 38.(30)		3		115. 48. 30.75		3	0.64	30.75	18.241
50	Piazzi I. 182.....	1	0.00	1. 41. 58.46	2.954			101. 27.					
51	g Persei.....			1. 42.(40)		3		39. 57. 20.86		3	0.97	20.86	18.006
52	ϵ Cassiopeiæ.....			1. 43.(40)		1	1	27. 4. 35.83	33.78	2	0.01	34.81	18.038
53	ζ Ceti.....	1	0.96	1. 44. 0.54	2.960			101. 5.					
54	β Arietis.....			1. 46.(20)		3		69. 55. 55.11		3	0.97	55.11	17.825
55	50 Cassiopeiæ.....			1. 50.(40)		2	1	18. 18. 46.12	46.43	3	0.33	46.22	17.782
56	α Piscium.....	1	0.01	1. 54. 14.20	3.102	3		87. 58. 2.63		3	0.95	2.63	17.625
57	Weisse I. 974.....	2	0.92	1. 54. 25.05	3.034			93. 10.					
58	γ^1 Andromedæ....			1. 54.(40)		1		48. 23. 48.66		1	0.99	48.66	17.557
59	γ^2 Andromedæ....			1. 54.(40)		1		48. 23. 45.46		1	0.99	45.46	17.597
60	Weisse I. 986.....	1	0.00	1. 54. 59.75	3.044	1		92. 21. 9.48		1	0.96	9.48	17.583
61	Weisse I. 990.....	1	0.96	1. 55. 12.51	3.035			93. 6.					
62	α Arietis.....	9	0.60	1. 58. 40.29	3.362	9	1	67. 15. 13.86	15.88	10	0.61	13.61	17.286
63	64 Ceti.....	3	0.96	2. 3. 23.06	3.156			82. 8.					
64	Lalande.. {4047 4048}			2. 4.(20)		2		43. 13. 24.95		2	0.94	24.95	17.176
65	μ Fornacis.....			2. 6.(20)		2		121. 26. 2.06		2	0.47	2.06	17.005
66	B. A. C. 718.....	2	0.01	2. 11. 17.69	4.166			33. 27.					
67	κ Fornacis.....	1	0.00	2. 15. 38.03	2.756	3		114. 30. 14.74		3	0.95	14.74	16.565
68	B. A. C. 744.....			2. 16.(40)		1	1	23. 16. 50.13	50.06	2	0.01	50.10	16.594
69	B. A. C. 750.....	1	0.96	2. 18. 4.92	3.211	3		80. 2. 6.19		3	0.97	6.19	16.525
70	B. A. C. 755.....	1	0.08	2. 18. 40.06	3.207	3		80. 7. 0.09		3	0.97	0.09	16.366
71	14 Trianguli.....	1	0.96	2. 22. 54.19	3.627	2	1	54. 31. 33.47	32.77	3	0.31	33.24	16.261
72	B. A. C. 784.....			2. 26.(20)		2		9. 11. 57.42		2	0.98	57.42	16.112
73	Weisse II. 459....			2. 27.(20)		1		103. 24. 58.29		1	0.93	58.29	16.052
74	Weisse II. 497....			2. 29.(10)		3		103. 33. 25.16		3	0.64	25.16	15.955
75	δ Ceti.....	1	0.96	2. 31. 44.78	3.074	1		90. 19. 30.43		1	0.96	30.43	15.785
76	B. A. C. 817.....	1	0.07	2. 32. 18.38	3.158			84. 32.					
77	12 Persei.....			2. 32.(40)		1	1	50. 26. 53.83	53.24	2	0.01	53.54	15.606
78	B. A. C. 830.....			2. 34.(20)		1		79. 54. 15.50		1	0.96	15.50	15.617
79	γ Ceti.....	6	0.75	2. 35. 28.89	3.100	3		87. 24. 10.98		3	0.34	10.98	15.445
80	36 Arietis.....	2	0.08	2. 35. 53.95	3.337			72. 53.					
81	{ B. A. C. 845... μ Ceti..... }	2	0.04	2. 36. 47.16	3.232	1		80. 31. 36.46		1	0.08	36.46	15.492
82	π Ceti.....			2. 37.(0)		1		104. 30. 1.53		1	0.96	1.53	15.510
83	η Persei.....	2	0.98	2. 39. 43.20	4.311	1		34. 44. 7.52		1	0.96	7.52	15.378
84	β Fornacis.....	1	0.00	2. 42. 46.19	2.509	1		123. 2. 30.46		1	0.00	30.46	15.415
85	B. A. C. 896.....	1	0.96	2. 46. 15.32	7.556			11. 11.					
86	η Eridani.....	2	0.98	2. 49. 3.27	2.928	3		99. 30. 5.58		3	0.94	5.58	14.622
87	4 Eridani.....	1	0.00	2. 50. 40.95	2.666			114. 28.					
88	α Ceti.....	8	0.41	2. 54. 23.46	+3.126	5		86. 30. 20.58		5	0.38	20.58	-14.416

61. Of the 11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.	Mean N. P. D. 1849, Jan. 1.	Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				h m s	s	T. D.	T. R.				
89	{ B. A. C. 951... }			2. 55.(10)		1	118. 40. 15.03	1	0.92	15.03	-14.197
90	{ ε Fornacis... }			2. 55.(30)		1	51. 44. 56.03	1	0.96	56.03	14.376
91	ρ Persei.....										
91	β Persei.....	1	0.99	2. 58. 21.80	+3.871		49. 38.				
92	{ Weisse II. 1090 }	2	0.04	3. 1. 8.47	2.901	1	100. 7. 38.69	1	0.04	38.69	14.111
92	{ * (c ₃₁) }										
93	Weisse III. 23....	2	0.96	3. 2. 22.83	2.900	2	100. 9. 11.49	2	0.05	11.49	14.034
94	δ Arietis.....	2	0.38	3. 3. 0.27	3.418	1	70. 50. 51.09	1	0.76	51.09	14.004
95	ζ Eridani.....	1	0.99	3. 8. 30.04	2.910		99. 23.				
96	15 Eridani.....	1	0.93	3. 11. 41.72	2.651	2	113. 3. 57.78	2	0.05	57.78	13.440
97	α Persei.....	4	0.36	3. 13. 34.09	4.238	1	40. 40. 51.71	1	0.07	51.71	13.266
98	σ Tauri.....			3. 16.(40)		1	81. 30. 22.68	1	0.07	22.68	13.053
99	B. A. C. 1058....	2	0.04	3. 16. 53.04	4.788		30. 36.				
100	B. A. C. 1062....			3. 17.(50)		3	31. 39. 1.81	6	0.03	1.42	13.066
101	*			3. 20.(30)		1	80. 45. 34.11	1	0.85	34.11	12.857
102	*			3. 22.(0)		1	77. 37. 9.72	1	0.07	9.72	12.756
103	f Tauri.....			3. 22.(30)		1	77. 35. 3.73	1	0.07	3.73	12.722
104	ε Eridani.....	2	0.02	3. 25. 49.13	2.826		99. 58.				
105	B. A. C. 1111....	1	0.07	3. 29. 6.23	5.116		27. 17.				
106	δ Eridani.....	2	0.05	3. 36. 1.04	2.871		100. 17.				
107	24 Tauri.....			3. 38.(20)		1	66. 21. 17.35	1	0.87	17.35	11.500
108	η Tauri.....	10	0.39	3. 38. 31.05	3.552	2	66. 21. 56.09	3	0.34	57.09	11.610
109	ε Tauri.....	3	0.30	3. 39. 59.88	3.279	2	79. 19. 30.63	2	0.44	30.63	11.453
110	B. A. C. 1211....	1	0.07	3. 45. 3.10	9.560		9. 44.				
111	B. A. C. 1229....			3. 49.(30)		2	104. 2. 25.65	2	0.06	25.65	10.842
112	γ Eridani.....	6	0.35	3. 50. 59.19	2.796		103. 56.				
113	λ Tauri.....	1	0.04	3. 52. 19.34	3.315		77. 56.				
114	A ² Tauri.....	1	0.07	3. 56. 24.21	3.541		68. 24.				
115	B. A. C. 1275....			4. 0.(40)		1	77. 0. 19.81	1	0.92	19.81	9.936
116	Weisse IV. 30....	1	0.99	4. 2. 30.75	3.357		76. 7.				
117	Weisse IV. 53....			4. 3.(40)		1	75. 27. 32.38	1	0.07	32.38	9.748
118	γ Tauri.....	1	0.99	4. 11. 12.34	3.407		74. 44.				
119	ν ⁴ Eridani.....	1	0.07	4. 12. 10.79	2.264		124. 10.				
120	δ ² Tauri.....	1	0.04	4. 15. 23.78	3.451		72. 25.				
121	Groombridge 828..			4. 16.(0)		2	17. 48. 23.78	4	0.08	23.88	8.792
122	δ ³ Tauri.....			4. 16.(50)		2	72. 25. 19.57	2	0.50	19.57	8.736
123	ν ⁵ Eridani.....	1	0.07	4. 18. 21.91	2.254		124. 22.				
124	ε Tauri.....	1	0.99	4. 19. 48.40	3.494		71. 10.				
125	θ ¹ Tauri.....	1	0.92	4. 19. 57.19	3.413	1	74. 22. 38.20	1	0.92	38.20	8.470
126	θ ² Tauri.....	1	0.92	4. 20. 2.68	3.420	1	74. 28. 5.55	1	0.92	5.55	8.463
127	80 Tauri.....	2	0.04	4. 21. 32.32	3.411		74. 42.				
128	B. A. C. 1391....	1	0.92	4. 21. 55.41	3.427		74. 8.				
129	81 Tauri.....	1	0.04	4. 22. 2.49	3.418		74. 38.				
130	*			4. 26.(20)		3	98. 34. 37.67	3	0.08	37.67	7.970
131	47 Eridani.....			4. 27.(0)		3	98. 33. 4.93	3	0.08	4.93	7.917
132	Aldebaran.....	19	0.40	4. 27. 15.64	+3.433	15	73. 47. 55.82	17	0.40	56.05	-7.725

130. Of nearly equal brightness with the following star, 47 Eridani.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				1849, Jan. 1.			T. D.	T. R.	T. D.	T. R.				
133	ν^7 Eridani	1	0.07	^h 4. 29. 40 ^m 88 ^s	^s +2.333	1			⁰ 120. 52. 26 ^{''} 47	"	1	0.92	26 ^{''} 47	— 7 ^{''} 672
134	53 Eridani	1	0.99	4. 31. 15.93	2.746				104. 36.					
135	ϵ^2 Tauri	2	0.49	4. 31. 39.26	3.336	1			78. 6. 12.77		1	0.04	12.77	7.571
136	B. A. C. 1448			4. 32. (20)		3			9. 4. 22.51		3	0.65	22.51	7.471
137	Piazzi IV. 158			4. 33. (10)		2			67. 21. 8.83		2	0.12	8.83	7.417
138	τ Tauri			4. 33. (10)		3			67. 20. 15.66		3	0.13	15.66	7.417
139	54 Eridani	1	0.92	4. 33. 50.28	2.623				109. 58.					
140	4 Camelopardali	1	0.04	4. 35. 26.66	4.960				33. 31.					
141	9 Camelopardali (α)	1	0.92	4. 39. 3.49	5.905				23. 55.					
142	Piazzi IV. 194.			4. 40. (50)		2			74. 22. 47.17		2	0.09	47.17	6.791
143	96 Tauri			4. 41. (10)		3			74. 21. 50.72		3	0.07	50.72	6.683
144	π^1 Orionis	2	0.96	4. 41. 38.83	3.258	1			83. 18. 23.51		1	0.99	23.51	6.715
145	π^2 Orionis			4. 42. (20)		1			81. 21. 49.47		1	0.99	49.47	6.637
146	π^3 Orionis	1	0.92	4. 43. 10.02	3.194				84. 39.					
147	Weisse IV. 1048	2	0.14	4. 47. 38.41	3.381	3			76. 16. 3.96		3	0.07	3.96	6.229
148	Weisse IV. 1081			4. 49. (10)		3			76. 18. 27.02		3	0.11	27.02	6.101
149	Weisse IV. 1086	1	0.16	4. 49. 17.01	3.383	3			76. 14. 15.19		3	0.12	15.19	6.091
150	Weisse IV. 1096			4. 49. (50)		3			76. 16. 57.11		3	0.07	57.11	6.045
151	Weisse IV. 1199	2	0.14	4. 53. 48.73	3.384	3			76. 18. 34.91		3	0.07	34.91	5.712
152	Weisse IV. 1218	1	0.14	4. 54. 35.90	3.379	2			76. 29. 26.17		2	0.13	26.17	5.646
153	11 Orionis	1	0.16	4. 55. 56.79	3.424	1			74. 48. 39.57		1	0.16	39.57	5.492
154	Weisse IV. 1312			4. 58. (10)		1			76. 7. 4.69		1	0.92	4.69	5.345
155	103 Tauri			4. 58. (50)		2			65. 56. 22.87		2	0.14	22.87	5.339
156	ϵ Leporis	3	0.11	4. 59. 4.27	2.538	2			112. 34. 39.72		2	0.12	39.72	5.219
157	β Eridani	1	0.92	5. 0. 25.74	2.948				95. 17.					
158	Lalande 9671	2	0.15	5. 0. 44.57	3.386				76. 17.					
159	15 Orionis	1	0.16	5. 1. 3.80	3.430	1			74. 36. 2.05		1	0.16	2.05	5.120
160	Weisse V. 11	2	0.15	5. 1. 41.92	3.389				76. 12.					
161	Weisse V. 12	2	0.15	5. 1. 42.42	3.389				76. 12.					
162	Weisse V. 48			5. 3. (30)		1			75. 49. 33.62		1	0.92	33.62	4.895
163	Weisse V. 54	3	0.14	5. 3. 48.47	3.388				76. 16.					
164	Capella	14	0.43	5. 5. 32.57	4.418	16	9		44. 9. 42.30	42.76	25	0.22	42.47	4.290
165	B. A. C. 1618			5. 6. (20)		2			98. 19. 44.62		2	0.96	44.62	4.654
166	Rigel	22	0.32	5. 7. 16.99	2.880	8			98. 22. 48.12		8	0.37	48.12	4.561
167	*	1	0.04	5. 10. 16.98	3.106				88. 27.					
168	λ Leporis			5. 12. (40)		1			103. 20. 12.93		1	0.16	12.93	4.092
169	B. A. C. 1657	2	0.13	5. 13. 49.54	3.064				90. 34.					
170	σ Orionis	2	0.13	5. 14. 3.40	3.064				90. 32.					
171	m Orionis			5. 14. (50)		1			86. 36. 19.99		1	0.99	19.99	3.916
172	Weisse V. 343			5. 15. (0)		1			86. 35. 50.10		1	0.99	50.10	3.912
173	*	1	0.12	5. 15. 32.03	3.478				72. 46.					
174	111 Tauri	1	0.12	5. 15. 36.89	3.498	1			72. 45. 42.84		1	0.99	42.84	3.899
175	β Tauri	18	0.40	5. 16. 45.04	3.788	8	4		61. 31. 32.04	31.52	12	0.25	31.87	3.562
176	σ Tauri	3	0.41	5. 18. 34.21	+3.602				68. 12.					
177	117 Tauri			5. 19. (20)		2			72. 53. 27.10		2	0.96	27.10	3.490
178	B. A. C. 1706			5. 19. (40)		2	2		15. 4. 5.77	4.98	4	0.12	5.38	— 3.512

142. Of the 7.8th magnitude.

158. Of the 8th magnitude.

152. Of the 8.9th magnitude.

167. Of the 9th or 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
179	β Leporis			^h 5. 21. (50)	^s	1		^o 110. 52. 56. 87	"	1	0.92	56.87	— 3.244
180	Weisse V. 603....	2	0.15	5. 24. 17.45	+3.062			90. 24.					
181	δ Orionis	20	0.26	5. 24. 17.64	3.066	3		90. 24. 57.01		3	0.11	57.01	3.112
182	120 Tauri	1	0.14	5. 24. 40.68	3.518			71. 34.					
183	*	1	0.99	5. 25. 40.19	3.731			63. 29.					
184	α Leporis	13	0.29	5. 26. 4.27	2.648	3		107. 56. 1.98		3	0.33	1.98	2.962
185	ϵ Orionis	20	0.34	5. 28. 33.19	3.044	10		91. 18. 10.40		10	0.18	10.40	2.744
186	ζ Tauri	1	0.99	5. 28. 37.33	3.585			63. 57.					
187	*			5. 29. (40)		1		63. 28. 31.04		1	0.99	31.04	2.647
188	125 Tauri	3	0.14	5. 30. 22.71	3.718			64. 12.					
189	α Columbæ	5	0.25	5. 34. 10.88	2.177	8		124. 9. 27.73		8	0.31	27.73	2.253
190	B. A. C. 1822....			5. 38. (10)		4		112. 28. 31.17		4	0.33	31.17	1.907
191	γ Leporis			5. 38. (10)		5		112. 30. 4.00		5	0.46	4.00	1.557
192	130 Tauri	2	0.11	5. 38. 38.04	3.496	1		72. 19. 58.09		1	0.99	58.09	1.867
193	31 Camelopardali..	2	0.13	5. 41. 26.84	5.365	2	2	30. 9. 14.31	13.17	4	0.12	13.74	1.580
194	135 Tauri			5. 41. (50)		4		75. 44. 36.27		4	0.52	36.27	1.548
195	137 Tauri	1	0.99	5. 43. 47.57	3.410	3		75. 52. 18.12		3	0.15	18.12	1.397
196	Lalande 11095....			5. 44. (10)		1		64. 57. 58.76		1	0.87	58.76	1.384
197	B. A. C. 1867....	3	0.12	5. 44. 20.71	3.571			69. 45.					
198	χ^1 Orionis	1	0.10	5. 45. 26.45	3.552	1		69. 45. 24.64		1	0.12	24.64	1.174
199	β Columbæ	1	0.16	5. 45. 38.36	2.109			125. 50.					
200	*	1	0.99	5. 46. 14.39	3.735	1		63. 33. 12.63		1	0.96	12.63	1.203
201	α Orionis	31	0.39	5. 46. 59.89	3.247	16		82. 37. 32.44		16	0.32	32.44	1.136
202	*			5. 47. (50)		1		52. 46. 51.15		1	0.13	51.15	1.064
203	β Aurigæ	3	0.16	5. 48. 27.27	4.404			45. 4.					
204	θ Aurigæ	2	0.12	5. 49. 25.64	4.092			52. 48.					
205	γ Columbæ	1	0.16	5. 52. 10.89	2.127			125. 18.					
206	Lalande 11509....			5. 56. (50)		2		66. 28. 49.49		2	0.12	49.49	— 0.277
207	ν Orionis	1	0.16	5. 58. 56.98	3.428			75. 13.					
208	3 Geminorum....			6. 0. (30)		1		66. 52. 1.32		1	0.99	1.32	+ 0.064
209	κ Aurigæ			6. 5. (50)		1	1	60. 27. 6.08	6.77	2	0.04	6.43	0.800
210	η Geminorum....	1	0.91	6. 5. 45.92	3.624			67. 27.					
211	71 Orionis			6. 6. (0)		0	2	70. 47. 50.81	52.52	8	0.11	51.24	0.785
212	*	3	0.14	6. 9. 50.09	3.639			66. 57.					
213	κ Columbæ	1	0.12	6. 11. 10.83	2.133			125. 6.					
214	Weisse VI. 334 (i_{10})			6. 11. (20)		1		104. 16. 43.62		1	0.87	43.62	0.991
215	μ Geminorum....	23	0.39	6. 13. 49.51	3.636	15	10	67. 24. 50.05	52.13	25	0.23	50.88	1.341
216	3 Canis Majoris...			6. 16. (40)		1		123. 21. 44.67		1	0.87	44.67	1.547
217	B. A. C. 2069....	3	0.20	6. 16. 58.54	9.399			11. 54.					
218	15 Geminor. (1st star)			6. 18. (50)		3		69. 7. 52.20		3	0.15	52.20	1.646
219	15 Geminor. (2nd star)			6. 18. (50)		3		69. 7. 23.30		3	0.15	23.30	1.686
220	ν Geminorum....	4	0.16	6. 19. 59.89	3.566			69. 42.					
221	Lalande 12360....	2	0.17	6. 20. 17.16	3.932			57. 7.					
222	*	2	0.17	6. 20. 44.89	3.931			57. 8.					
223	*	2	0.17	6. 21. 6.51	+3.932			57. 6.					
224	*			6. 27. (20)		1		55. 21. 25.37		1	0.12	25.37	+ 2.386

183, 221, and 222. Of the 8.9th magnitude.

187. Of the 7th magnitude.

200. Of about the 10th or 11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				h	m		T. D.	T. R.	T. D.	T. R.				
225	Cephei 51 (Hov.).... Cephei 51 (Hev.) S.P.	10	0.33	6. 28.	2. 26	+30.730	9 1	9	2. 44. 36.28 36.25	35.13	19	0.20	35.73	+ 2.551
226	γ Geminorum.....	2	0.99	6. 28.	59.17	3.469			73. 29.					
227	*	3	0.13	6. 29.	32.73	3.984			55. 26.					
228	12 Lyncis	3	0.13	6. 32.	52.94	5.303			30. 25.					
229	42 Camelopardali..	3	0.13	6. 35.	11.11	6.302	2	2	22. 16. 14.53	16.15	4	0.12	15.34	3.057
230	B. A. C. 2210.....			6. 38.	(0)		3	3	12. 50. 35.96	37.17	6	0.19	36.57	3.340
231	Sirius	38	0.40	6. 38.	29.68	2.645	23		106. 30. 44.84		23	0.36	44.84	4.582
232	14 Lyncis			6. 39.	(40)		1	1	30. 22. 48.60	48.23	2	0.12	48.42	3.494
233	*	2	0.13	6. 40.	26.29	3.994			54. 57.					
234	κ Canis Majoris ...			6. 44.	(10)		3		122. 20. 12.22		3	0.14	12.22	3.851
235	ε Canis Majoris...	13	0.31	6. 52.	41.48	2.360	8		118. 46. 11.29		8	0.26	11.29	4.562
236	Piazzi VI. 311....			6. 55.	(10)		2		69. 11. 15.45		2	0.16	15.45	4.781
237	ζ Geminorum.....	2	0.47	6. 55.	9.01	3.567	2		69. 12. 48.30		2	0.16	48.30	4.791
238	22 Canis Majoris ..	3	0.14	6. 55.	42.21	2.391			117. 43.					
239	17 Lyncis	3	0.15	6. 56.	4.96	5.416			28. 59.					
240	B. A. C. 2326.....			6. 59.	(0)		3	2	7. 18. 57.16	55.04	5	0.16	56.31	5.126
241	Lalande 13792....			6. 59.	(50)		2		64. 1. 43.81		2	0.18	43.81	5.177
242	Lalande 13797....			7. 0.	(0)		2		64. 1. 41.60		2	0.18	41.60	5.191
243	*	1	0.11	7. 1.	46.29	3.529			70. 26.					
244	*	2	0.13	7. 1.	48.15	3.529			70. 26.					
245	δ Canis Majoris...			7. 2.	(20)		1		116. 9. 25.98		1	0.22	25.98	5.368
246	18 Lyncis			7. 2.	(40)		4	4	30. 6. 3.18	4.40	8	0.17	3.79	5.746
247	*	2	0.13	7. 3.	0.99	3.529			70. 26.					
248	Lalande 14047....	3	0.13	7. 7.	9.57	4.191			48. 47.					
249	Lalande 14177....	1	0.21	7. 10.	22.15	3.593			67. 42.					
250	δ Geminorum.....	18	0.29	7. 11.	6.11	3.597	14	4	67. 44. 40.48	40.04	18	0.29	40.38	6.135
251	B. A. C. 2439.....	3	0.20	7. 15.	7.23	6.319	1	1	21. 14. 4.02	3.84	2	0.12	3.93	6.527
252	59 Geminorum....	5	0.14	7. 15.	9.39	3.744			62. 5.					
253	*	2	0.18	7. 17.	4.41	4.490			41. 38.					
254	Lalande 14381....	3	0.18	7. 17.	6.45	4.491			41. 38.					
255	Castor.....	15	0.28	7. 24.	57.48	3.842	10	6	57. 47. 9.56	8.54	16	0.19	9.18	7.344
256	68 Geminorum....	1	0.24	7. 24.	59.15	3.433	1		73. 51. 12.43		1	0.24	12.43	7.227
257	Procyon.....	25	0.31	7. 31.	23.74	3.146	12		84. 23. 30.29		12	0.35	30.29	8.837
258	49 Camelopardali..	3	0.20	7. 32.	45.14	5.498			26. 49.					
259	κ Geminorum.....			7. 35.	(20)		1		65. 14. 40.53		1	0.24	40.53	8.154
260	Pollux.....	26	0.31	7. 36.	4.17	3.683	12	6	61. 36. 49.21	49.33	18	0.26	49.25	8.224
261	B. A. C. 2596.....			7. 42.	(0)		1	1	15. 41. 18.70	19.62	2	0.16	19.16	8.634
262	26 Lyncis			7. 43.	(40)		1	1	42. 2. 59.67	59.50	2	0.25	59.59	8.806
263	11 Puppis.....	3	0.20	7. 50.	22.03	2.583			112. 29.					
264	5 Cancri	1	0.17	7. 52.	53.62	3.430	1		73. 7. 58.37		1	0.17	58.37	9.444
265	Lalande 15646....	3	0.20	7. 53.	17.14	3.503			69. 51.					
266	29 Monocerotis ...	3	0.21	8. 1.	0.16	3.020			92. 33.					
267	15 Argus.....	8	0.28	8. 1.	6.81	2.558	5		113. 52. 20.80		5	0.22	20.80	10.033
268	Santini 569.....	2	0.21	8. 6.	1.75	+3.105			88. 17.					
269	Weisse VIII. 217.			8. 8.	(40)		1		89. 48. 10.16		1	0.21	10.16	+10.676

227. Of the 9.10th magnitude.

233, 247, 254. Of the 9th magnitude.

243, 244. Of the 8.9th magnitude.

248. Of the 7.8th magnitude.

269. Of the 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
270	ο Ursæ Majoris. . . .			8. 17. (40)	"	4	4	28. 46. 57.94	58.74	8	0.22	58.34	+11.455
271	32 Lyncis	3	0.22	8. 23. 39.68	+3.881			53. 3.					
272	33 Lyncis	3	0.21	8. 25. 1.04	3.882			53. 4.					
273	Groombridge 1452			8. 28. (40)		1	1	9. 27. 2.58	3.45	2	0.27	3.02	12.117
274	B. A. C. 2930.			8. 33. (0)		2	2	9. 24. 60.18	59.19	4	0.23	59.69	12.416
275	{ β Pixidis Naut. } { δ Mali. }			8. 34. (10)		1		124. 46. 31.00		1	0.21	31.00	12.595
276	γ Cancri			8. 34. (30)		1		67. 59. 32.30		1	0.23	32.30	12.488
277	δ Cancri.	1	0.25	8. 36. 5.87	3.425			71. 18.					
278	ε Hydræ	16	0.34	8. 38. 46.54	3.189	10		83. 1. 50.35		10	0.22	50.35	12.841
279	6 Ursæ Majoris. . . .	3	0.20	8. 43. 37.09	5.258			24. 49.					
280	ι Ursæ Majoris. . . .	9	0.24	8. 48. 50.71	4.149	6		41. 22. 9.96		6	0.19	9.96	13.763
281	{ B. A. C. 3059. . } { 10 Ursæ Majoris }			8. 50. (50)		4	4	47. 37. 23.80	23.20	8	0.24	23.50	13.883
282	κ Ursæ Majoris . . .	3	0.17	8. 53. 17.60	4.140			42. 15.					
283	ξ Cancri			9. 0. (40)		2		67. 20. 50.35		2	0.20	50.35	14.203
284	ζ Ursæ Majoris . . .			9. 2. (20)		1	1	27. 57. 33.52	34.42	2	0.16	33.97	14.384
285	κ Leonis			9. 15. (50)		1	1	63. 10. 15.30	16.62	2	0.26	15.96	15.155
286	α Hydræ	22	0.24	9. 20. 10.01	2.948	14		98. 0. 24.66		14	0.27	24.66	15.330
287	θ Ursæ Majoris . . .	10	0.32	9. 22. 43.71	4.063	9		37. 38. 16.65		9	0.21	16.65	16.087
288	27 Ursæ Majoris . .			9. 29. (0)		1	1	17. 3. 58.28	56.98	2	0.10	57.63	15.916
289	2 Sextantis	2	0.10	9. 30. 34.52	3.138			84. 40.					
290	ο Leonis.	1	0.25	9. 33. 5.26	3.228	1		79. 25. 21.49		1	0.25	21.49	16.123
291	28 Ursæ Majoris . .			9. 34. (10)		1	1	25. 39. 19.06	23.88	2	0.13	21.47	16.140
292	ε Leonis.	15	0.32	9. 37. 16.27	3.425	14	4	65. 31. 59.03	60.26	18	0.24	59.30	16.331
293	υ Ursæ Majoris. . . .			9. 40. (10)		2	2	30. 15. 15.68	15.50	4	0.18	15.59	16.627
294	φ Ursæ Majoris . . .			9. 41. (50)		1		35. 14. 0.00		1	0.26	0.00	16.571
295	Weisse IX. 1296. . .	1	0.27	10. 0. 9.82	3.221	1		77. 16. 3.37		1	0.29	3.37	17.376
296	Regulus.	19	0.39	10. 0. 19.52	3.203	11	6	77. 17. 48.12	49.14	17	0.33	48.48	17.369
297	*	1	0.10	10. 11. 17.05	3.334			66. 40.					
298	B. A. C. 3528.	3	0.30	10. 12. 9.57	8.142	3	3	6. 40. 40.63	39.83	6	0.28	40.23	17.946
299	24 Sextantis			10. 15. (40)		1		90. 8. 21.10		1	0.29	21.10	18.112
300	35 Ursæ Majoris . .	3	0.29	10. 19. 6.99	4.367			23. 36.					
301	B. A. C. 3593.	3	0.29	10. 22. 6.50	5.380	3	3	13. 30. 42.93	43.31	6	0.29	43.12	18.242
302	ρ Leonis.	1	0.10	10. 24. 51.34	3.171	1		79. 55. 5.36		1	0.10	5.36	18.391
303	38 Ursæ Majoris . .	3	0.29	10. 31. 35.00	4.215			23. 30.					
304	B. A. C. 3652.	3	0.29	10. 32. 10.75	4.436	3	3	20. 8. 9.92	10.75	6	0.31	10.34	18.649
305	*			10. 34. (0)		1		17. 41. 48.77		1	0.29	48.77	18.659
306	B. A. C. 3677.	1	0.30	10. 35. 43.68	2.763			121. 56.					
307	ι Leonis.			10. 41. (20)		2		78. 39. 26.85		2	0.31	26.85	18.875
308	42 Ursæ Majoris . .	3	0.29	10. 41. 51.79	3.850	4	4	29. 52. 45.91	46.93	8	0.31	46.42	18.990
309	*	3	0.29	10. 45. 17.85	3.938			26. 15.					
310	δ Leonis	1	0.18	10. 52. 45.61	3.104	1		85. 34. 21.63		1	0.18	21.63	19.247
311	α Ursæ Majoris . . .	13	0.57	10. 54. 22.03	3.781	14	7	27. 26. 5.28	5.45	21	0.41	5.34	19.328
312	χ Leonis	1	0.18	10. 57. 13.34	3.103	2		81. 50. 55.00		2	0.25	55.00	19.387
313	δ Leonis	16	0.43	11. 6. 4.30	+3.207	11	6	68. 38. 58.92	58.47	17	0.35	58.76	+19.640

305. Of the 11th or 12th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R.A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
314	δ Crateris	12	0·36	^h 11. 11. 47·67	+2·995	9		^o 103. 57. 43·64	"	9	0·32	43·64	+19·411
315	σ Leonis	2	0·59	11. 13. 21·01	3·099	2		83. 8. 35·86		2	0·59	35·86	19·660
316	B. A. C. 3875			11. 16. (0)		1		125. 20. 13·63		1	0·34	13·63	19·895
317	τ Leonis	2	0·59	11. 20. 10·26	3·091	2		86. 18. 45·62		2	0·59	45·62	19·781
318	Weisse XI. 349			11. 20. (10)		1		86. 20. 16·66		1	0·93	16·66	19·751
319	λ Draconis			11. 22. (20)		3	2	19. 50. 10·23	8·65	7	0·30	9·55	19·864
	λ Draconis S. P.					2		9·37					
320	χ Ursæ Majoris			11. 38. (0)		3	3	41. 23. 0·26	1·20	6	0·34	0·73	19·943
321	β Leonis	12	0·56	11. 41. 21·26	3·066	8	3	74. 35. 2·45	1·29	11	0·38	2·13	20·083
322	β Virginis	3	0·51	11. 42. 49·79	3·128	1		87. 23. 3·46		1	0·33	3·46	20·279
323	{ B. A. C. 4010. . . } { Groomb. 1830. . }	4	0·33	11. 44. 15·66	3·488	4		51. 11. 55·59		4	0·33	55·59	25·708
324	γ Ursæ Majoris	10	0·68	11. 45. 52·00	3·199	9		35. 27. 55·39		9	0·52	55·39	20·024
325	Lalande 22547	4	0·33	11. 50. 57·73	3·113	4		51. 16. 59·34		4	0·32	59·34	20·039
326	67 Ursæ Majoris			11. 54. (30)		2	2	46. 7. 0·42	0·23	4	0·34	0·33	20·029
327	δ Ursæ Majoris			12. 8. (0)		3	3	32. 7. 41·17	39·92	6	0·34	40·55	20·102
328	η Virginis	2	0·26	12. 12. 10·84	3·067	2		89. 49. 37·91		2	0·30	37·91	20·066
329	Groombridge 1867	3	0·36	12. 12. 41·57	3·012			51. 16.					
330	13 Comæ			12. 16. (40)		1	1	63. 3. 48·86	48·14	2	0·34	48·50	20·022
331	β Corvi	7	0·40	12. 26. 27·84	3·131	3		112. 33. 38·86		3	0·31	38·86	19·991
332	κ Draconis			12. 27. (0)		3	3	19. 22. 42·19	42·16	6	0·40	42·18	19·956
333	6 Draconis	1	0·26	12. 28. 19·00	2·615			19. 9.					
334	9 Canum Venat			12. 31. (30)		1	1	48. 17. 37·26	35·48	2	0·26	36·37	19·894
335	γ Virginis (N. star)			12. 34. (0)		1		90. 37. 11·57		1	0·33	11·57	19·853
336	γ Virginis (as one star)	2	0·30	12. 34. 0·70	3·040			90. 37.					
337	γ Virginis (S. star)			12. 34. (0)		1		90. 37. 15·83		1	0·33	15·83	19·853
338	Weisse XII. 619			12. 36. (30)		1		92. 0. 55·06		1	0·26	55·06	19·802
339	35 Virginis			12. 40. (10)		2		85. 36. 7·37		2	0·39	7·37	19·796
340	35 Comæ			12. 45. (50)		1		67. 55. 57·29		1	0·33	57·29	19·694
341	δ Virginis	3	0·46	12. 47. 59·90	3·023	2		85. 46. 51·86		2	0·22	51·86	19·706
342	12 Canum Venat. (2d star)	6	0·60	12. 48. 57·42	2·820	5	3	50. 51. 54·09	54·13	8	0·40	54·11	19·545
343	9 Draconis			12. 54. (10)		1	1	22. 35. 13·81	12·95	2	0·39	13·38	19·526
344	14 Canum Venat			12. 58. (40)		2	2	53. 23. 29·95	30·58	4	0·36	30·27	19·390
345	g Virginis			13. 0. (0)		1		99. 55. 54·87		1	0·41	54·87	19·401
346	θ Virginis	5	0·31	13. 2. 8·27	3·101	1		94. 43. 54·07		1	0·34	54·07	19·371
347	α Comæ	3	0·40	13. 2. 38·50	2·924			71. 40.					
348	Lalande 24610	2	0·36	13. 8. 14·24	3·104			94. 52.					
349	B. A. C. 4452	3	0·40	13. 11. 9·34	0·412			8. 44.					
350	Spica	33	0·46	13. 17. 14·65	+3·149	12		100. 22. 17·72		12	0·39	17·72	18·954
351	B. A. C. 4498	1	0·41	13. 20. 57·66	-2·867			4. 27.					
352	Weisse XIII. 364			13. 22. (20)		2		83. 12. 23·16		2	0·40	23·16	18·774
353	h Virginis	1	0·41	13. 25. 1·06	+3·151	1		99. 23. 7·68		1	0·41	7·68	18·731
354	ζ Virginis	1	0·93	13. 27. 0·14	3·055			89. 49.					
355	B. A. C. 4536	3	0·41	13. 28. 3·09	2·691			52. 3.					
356	81 Ursæ Majoris	1	0·41	13. 28. 18·76	2·326			33. 53.					
357	25 Canum Venat	3	0·40	13. 30. 44·92	+2·681	3	3	52. 56. 6·99	7·57	6	0·41	7·28	+18·503

338. Of the 6·7th magnitude.

348. Of about the 8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
358	<i>m</i> Virginis	3	0.46	13. 33. 41.56 ^{h m s}	+3.141	2		97. 56. 21.07 ^{o ' "}	"	2	0.23	21.07	+18.392
359	Weisse XIII. 597.			13. 34. (40)		1		88. 14. 16.95		1	0.41	16.95	18.368
360	Weisse XIII. 670.			13. 38. (30)		2		84. 7. 28.90		2	0.41	28.90	18.231
361	<i>g</i> Centauri.	2	0.41	13. 40. 42.81	3.452			123. 42.					
362	<i>η</i> Ursæ Majoris.	15	0.64	13. 41. 35.17	2.377	7		39. 55. 52.80		7	0.64	52.80	18.148
363	B. A. C. 4614.	1	0.41	13. 42. 4.98	0.143			11. 11.					
364	*	1	0.41	13. 46. 32.80	3.095	2		92. 15. 23.70		2	0.41	23.70	17.926
365	<i>η</i> Bootis.	23	0.50	13. 47. 29.70	2.859	8	2	70. 50. 35.25	35.84	10	0.49	35.37	18.233
366	B. A. C. 4674.	2	0.41	13. 54. 16.55	3.453			120. 57.					
367	94 Virginis.	2	0.25	13. 58. 18.42	3.167	6		98. 10. 8.02		6	0.37	8.02	17.423
368	B. A. C. 4689.	3	0.41	13. 58. 31.70	1.331			20. 36.					
369	<i>α</i> Draconis S.P. ..			14. 0. (20)		1		24. 54. 2.90		1	0.96	2.90	17.373
370	<i>κ</i> Virginis.	1	0.41	14. 4. 50.76	3.195			99. 34.					
371	B. A. C. 4720.	3	0.42	14. 6. 29.73	3.120			95. 15.					
372	Arcturus.	28	0.61	14. 8. 46.50	2.733	26	4	70. 1. 44.91	44.51	30	0.62	44.86	18.931
373	<i>ι</i> Bootis.			14. 10. (50)		1		37. 56. 2.75		1	0.45	2.75	16.805
374	<i>λ</i> Virginis.	2	0.42	14. 10. 56.68	3.237	2		102. 40. 24.50		2	0.43	24.50	16.839
375	*	1	0.41	14. 23. 28.53	2.670			62. 56.					
376	<i>ρ</i> Bootis.			14. 25. (20)		1		58. 57. 46.53		1	0.41	46.53	16.026
377	B. A. C. 4817.	3	0.45	14. 27. 11.35	1.439			26. 9.					
378	5 Ursæ Minoris ...			14. 27. (50)		6	3	13. 37. 57.18	56.88	9	0.43	57.08	16.056
379	B. A. C. 4846.	3	0.44	14. 33. 29.35	2.865	2		75. 48. 49.03		2	0.45	49.03	15.892
380	<i>μ</i> Virginis.			14. 35. (10)		4		94. 59. 54.00		4	0.45	54.00	15.961
381	<i>ε</i> Bootis.	24	0.52	14. 38. 23.57	2.622	13	1	62. 17. 10.18	10.30	14	0.44	10.19	15.452
382	<i>μ</i> Libræ.			14. 41. (0)		3		103. 30. 58.83		3	0.44	58.83	15.316
383	8 Libræ.	3	0.42	14. 42. 20.70	3.307	3		105. 21. 57.54		3	0.43	57.54	15.300
384	<i>α</i> Libræ.	14	0.36	14. 42. 31.98	3.306	7		105. 24. 37.90		7	0.45	37.90	15.251
385	39 Bootis.			14. 44. (30)		2		40. 39. 22.36		2	0.44	22.36	15.086
386	*	1	0.41	14. 46. 14.92	+1.363			27. 27.					
387	<i>β</i> Ursæ Minoris ...	9	0.76	14. 51. 12.51	-0.274	14	2	15. 13. 38.13	38.29	16	0.64	38.15	14.759
388	<i>δ</i> Libræ.	1	0.12	14. 52. 54.65	+3.197	3		97. 54. 58.23		3	0.45	58.23	14.622
389	<i>ψ</i> Bootis.	3	0.45	14. 57. 58.58	2.572			62. 28.					
390	Groombridge 2202.	3	0.47	15. 7. 50.58	1.940			40. 51.					
391	<i>β</i> Libræ.	10	0.39	15. 8. 53.25	3.220	9		98. 49. 18.88		9	0.41	18.88	13.619
392	Lalande 27904.			15. 10. (40)		1		52. 22. 20.47		1	0.47	20.47	13.507
393	<i>δ</i> Libræ.			15. 14. (40)		3		104. 35. 26.52		3	0.47	26.52	13.235
394	<i>η</i> Coronæ.	2	0.46	15. 16. 58.16	2.479			59. 10.					
395	<i>ζ</i> ¹ Libræ.			15. 19. (50)		2		106. 11. 8.49		2	0.46	8.49	12.943
396	<i>γ</i> Ursæ Minoris ...			15. 21. (0)		1		17. 37. 41.87		1	0.50	41.87	12.774
397	<i>ι</i> Draconis.	2	0.92	15. 21. 34.72	1.332	1		30. 30. 12.30		1	0.87	12.30	12.764
398	36 Libræ.			15. 25. (30)		2		117. 31. 59.46		2	0.49	59.46	12.568
399	37 Libræ.			15. 26. (0)		1		99. 32. 36.04		1	0.35	36.04	12.714
400	<i>α</i> Coronæ.	16	0.75	15. 28. 17.78	2.538	12		62. 46. 26.07		12	0.69	26.07	12.383
401	<i>α</i> Serpentis.	10	0.66	15. 36. 49.93	+2.951	8		83. 5. 42.75		8	0.59	42.75	11.660
402	<i>θ</i> Libræ.			15. 45. (10)		3		106. 16. 53.41		3	0.50	53.41	10.999
403	B. A. C. 5279.			15. 48. (50)		1		33. 43. 32.09		1	0.52	32.09	+10.861

375. Of about the 10th magnitude.

386. Of the 8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N. P. D.
				1849, Jan. 1.			T. D.	T. R.	T. D.	T. R.				
404	ζ Ursæ Minoris....	9	0.73	15. 49. 34.22	^h ^m ^s	-2.332	4		11. 44. 36.56	"	4	0.50	36.56	+10.803
405	β ¹ Scorpii.....	4	0.52	15. 56. 39.81		+3.478	6		109. 23. 13.59		6	0.50	13.59	10.297
406	β ² Scorpii.....	1	0.53	15. 56. 40.28		3.470	2		109. 23. 0.27		2	0.48	0.27	10.369
407	Weisse XV. 1100.			15. 57.(50)			1		101. 53. 17.19		1	0.47	17.19	10.192
408	γ ¹ Scorpii.....			16. 3.(10)			2		109. 3. 8.98		2	0.50	8.98	9.786
409	γ ² Scorpii.....			16. 3.(10)			2		109. 3. 47.73		2	0.50	47.73	9.896
410	{ B. A. C. 5392. } { 48 Serpentis .. }	3	0.52	16. 4. 38.74		2.711	1		72. 56. 22.96		1	0.50	22.96	9.613
411	δ Ophiuchi.....	8	0.52	16. 6. 26.18		3.138	8		93. 18. 3.83		8	0.53	3.83	9.643
412	*			16. 12.(10)			1		31. 44. 56.36		1	0.52	56.36	9.092
413	γ Herculis.....	1	0.93	16. 15. 15.72		2.645			70. 29.					
414	ψ Ophiuchi.....	1	0.27	16. 15. 16.57		3.501	3		109. 40. 43.20		3	0.52	43.20	8.908
415	Antares.....	8	0.53	16. 20. 9.33		3.665	11		116. 5. 29.38		11	0.52	29.38	8.469
416	22 Scorpii.....			16. 21.(0)			1		114. 46. 37.97		1	0.53	37.97	8.406
417	η Draconis.....	14	0.68	16. 21. 57.37		0.820	14		28. 8. 32.95		14	0.73	32.95	8.240
418	η Ursæ Minoris S.P.			16. 22.(0)			1		13. 53. 57.68		1	0.12	57.68	8.117
419	φ Ophiuchi.....			16. 22.(30)			1		106. 16. 42.13		1	0.56	42.13	8.307
420	ω Ophiuchi.....			16. 23.(10)			3		111. 8. 16.46		3	0.52	16.46	8.144
421	β Herculis.....	3	0.92	16. 23. 43.79		2.576			68. 11.					
422	Lalande 30230....			16. 29.(40)			3		80. 33. 18.02		3	0.50	18.62	7.702
423	B. A. C. 5573.....			16. 32.(30)			4		107. 45. 34.89		4	0.52	34.89	7.471
424	{ B. A. C. 5579. } { 24 Scorpii..... }			16. 32.(50)			3		107. 26. 40.99		3	0.51	40.99	7.414
425	η Herculis.....			16. 37.(40)			1		50. 47. 13.51		1	0.00	13.51	7.120
426	g Draconis S.P. ..			16. 39.(50)			2		25. 7. 25.67		2	0.14	25.67	6.873
427	ε Scorpii.....			16. 40.(20)			1		124. 0. 45.96		1	0.53	45.96	7.132
428	Weisse XVI. 782.			16. 40.(30)			4		76. 3. 41.86		4	0.51	41.86	6.818
429	Weisse XVI. 853.	2	0.54	16. 43. 59.30		2.730	1		74. 53. 46.01		1	0.53	46.01	6.516
430	49 Herculis.....			16. 45.(10)			2		74. 46. 5.62		2	0.52	5.62	6.453
431	*			16. 46.(30)			1		73. 54. 59.70		1	0.50	59.70	6.323
432	*			16. 51.(0)			2		102. 39. 21.14		2	0.52	21.14	5.948
433	*			16. 54.(50)			1		110. 10. 4.04		1	0.53	4.04	5.878
434	Lalande 30976....			16. 55.(0)			3		110. 15. 14.83		3	0.52	14.83	5.612
435	h ² Draconis.....	3	0.51	16. 55. 41.28		+0.275			24. 44.					
436	B. A. C. 5746.....			16. 55.(50)			1		110. 16. 35.35		1	0.53	35.35	5.632
437	Weisse XVI. 1135			16. 59.(30)			1		85. 25. 50.88		1	0.53	50.88	5.233
438	ε Ursæ Minoris ...	11	0.59	17. 1. 37.93		-6.524	6		7. 43. 21.90		6	0.52	21.90	5.057
439	η Ophiuchi.....	1	0.58	17. 1. 43.23		+3.435			105. 32.					
440	A Ophiuchi.....			17. 6.(0)			1		116. 22. 29.05		1	0.53	29.05	5.822
441	α ¹ Herculis.....	21	0.57	17. 7. 45.85		2.732	13		75. 25. 59.26		13	0.45	59.26	4.469
442	α ² Herculis.....	3	0.55	17. 7. 46.08		2.732	2		75. 26. 1.06		2	0.57	1.06	4.532
443	ζ Draconis.....	2	0.92	17. 8. 21.57		0.159			24. 6.					
444	39 Ophiuchi (S. star)	2	0.50	17. 8. 48.41		3.654			114. 7.					
445	39 Ophiuchi (N. star)	2	0.50	17. 8. 48.44		3.654			114. 7.					
446	Lalande 31499....	3	0.51	17. 12. 30.43		+3.370	3		102. 55. 31.60		3	0.54	31.60	4.126
447	*			17. 16.(10)			1		57. 59. 7.82		1	0.54	7.82	+ 3.813

432. This is Hind's variable star. It was noted as being of the 8th magnitude on July 4, and of the 9th or 10th magnitude on July 12.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
448	B. A. C. 5888.....			^h 17. 18. (30)		1		^o 102. 22. 25.49	"	1	0.53	25.49	+ 3.672
449	β Draconis	7	0.81	17. 27. 1.51	+ 1.350	11		37. 35. 4.96		11	0.80	4.96	2.867
450	*	1	0.58	17. 27. 28.25	2.649			72. 18.					
451	*	1	0.58	17. 27. 37.20	2.651			72. 23.					
452	α Ophiuchi	20	0.57	17. 27. 55.57	2.779	8		77. 19. 31.46		8	0.40	31.46	2.987
453	ξ Serpentis			17. 29. (0)		2		105. 17. 51.22		2	0.54	51.22	2.755
454	Lalande 32112....	1	0.53	17. 29. 20.76	2.148			55. 9.					
455	Weisse XVII. 619	1	0.53	17. 31. 31.56	3.022			87. 53.					
456	Weisse XVII. 637	3	0.56	17. 32. 18.25	3.022			87. 54.					
457	58 Ophiuchi	2	0.58	17. 34. 23.00	3.594			111. 36.					
458	ι Herculis	1	0.93	17. 35. 12.27	+ 1.713	1		43. 54. 41.40		1	0.93	41.40	2.155
459	ω Draconis	3	0.92	17. 37. 50.53	- 0.362			21. 10.					
460	ψ ¹ Draconis	3	0.52	17. 44. 38.15	1.096			17. 47.					
461	ψ ² Draconis	3	0.52	17. 44. 39.95	- 1.094			17. 46.					
462	4 Sagittarii	2	0.54	17. 50. 34.60	+ 3.661	3		113. 47. 47.13		3	0.58	47.13	0.834
463	ξ Draconis	2	0.93	17. 50. 55.21	1.036			33. 6.					
464	Lalande 32981			17. 51. (40)		2		38. 28. 43.73		2	0.56	43.73	0.729
465	ν Herculis			17. 52. (40)		1		59. 47. 39.95		1	0.56	39.95	0.641
466	γ Draconis	19	0.58	17. 53. 6.06	1.393	24		38. 29. 28.32		24	0.54	28.32	0.639
467	*			17. 57. (10)		1		41. 31. 52.90		1	0.63	52.90	0.247
468	B. A. C. 6125.....			17. 58. (10)		1		111. 27. 12.44		1	0.56	12.44	0.200
469	B. A. C. 6133.....			17. 59. (40)		1		111. 27. 51.72		1	0.50	51.72	+ 0.029
470	μ Sagittarii	12	0.56	18. 4. 44.00	3.587	3		111. 5. 32.79		3	0.55	32.79	- 0.427
471	14 Sagittarii			18. 5. (10)		2		111. 44. 51.47		2	0.62	51.47	0.412
472	15 Sagittarii			18. 6. (10)		2		110. 40. 0.57		2	0.62	0.57	0.579
473	*	1	0.56	18. 6. 44.66	+ 3.811	1		118. 58. 22.34		1	0.56	22.34	0.590
474	40 Draconis	2	0.58	18. 11. 19.46	- 4.459			10. 2.					
475	41 Draconis	2	0.58	18. 11. 25.73	- 4.466			10. 1.					
476	105 Herculis	2	0.51	18. 12. 57.97	+ 2.466			65. 37.					
477	λ Sagittarii	1	0.28	18. 18. 39.16	+ 3.707	1		115. 29. 54.21		1	0.28	54.21	1.400
478	δ Ursæ Minoris ...	8	0.46	18. 21. 3.46	- 19.290	6		3. 24. 10.68		6	0.62	10.68	1.845
479	φ Draconis	1	0.62	18. 22. 55.17	- 0.848			18. 45.					
480	*			18. 25. (40)		1		70. 30. 13.90		1	0.63	13.90	2.241
481	*			18. 25. (50)		1		70. 38. 30.93		1	0.62	30.93	2.255
482	α Lyræ	32	0.54	18. 31. 49.58	+ 2.031	18	5	51. 21. 13.91	13.46	23	0.47	13.81	3.072
483	Groombridge 2646.	3	0.62	18. 38. 29.15	1.763			45. 13.					
484	*	1	0.62	18. 38. 29.55	1.763			45. 12.					
485	β ¹ Lyræ	21	0.64	18. 44. 30.34	2.213	7		56. 48. 31.72		7	0.63	31.72	3.853
486	β ² Lyræ	3	0.64	18. 44. 32.32	2.213	4		56. 49. 11.61		4	0.59	11.61	3.872
487	ζ Sagittarii			18. 53. (0)		3		120. 5. 24.63		3	0.64	24.63	4.567
488	γ Lyræ	3	0.94	18. 53. 17.71	2.244	3		57. 30. 49.77		3	0.96	49.77	4.642
489	ο Sagittarii	1	0.51	18. 55. 37.81	3.600	1		111. 57. 25.26		1	0.51	25.26	4.791
490	ζ Aquilæ	16	0.71	18. 58. 28.19	2.755	9		76. 21. 23.38		9	0.67	23.38	5.003
491	π Sagittarii	2	0.62	19. 0. 46.86	3.575	2		111. 15. 28.58		2	0.62	28.58	- 5.266
492	B. A. C. 6549.....	2	0.62	19. 0. 50.60	3.823			120. 14.					
493	d Sagittarii	2	0.62	19. 8. 47.87	+ 3.519			109. 13.					

450. Of the 8.9th magnitude.
456. Of the 9th magnitude.

451. Of the 9.10th magnitude.
473. Of the 10th magnitude.
484. Of the 9½th magnitude.

455. Of the 7th magnitude.
483. Of the 8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
494	B. A. C. 6587.....	3	0·62	^h 19. 9. 20·93	^s +3·506			^o 109. 8.	"			"	"
495	κ Cygni	1	0·97	19. 13. 36·12	1·389			36. 55.					
496	δ Aquilæ	19	0·65	19. 17. 53·04	3·025	11		87. 10. 54·23		11	0·65	54·23	— 6·807
497	α Vulpeculæ			19. 22. (30)		3		65. 38. 11·13		3	0·64	11·13	6·974
498	e ² Sagittarii	3	0·66	19. 33. 52·58	3·440	3		106. 28. 21·61		3	0·66	21·61	8·028
499	B. A. C. 6755.....			19. 36. (20)		3		122. 15. 59·37		3	0·69	59·37	8·104
500	γ Aquilæ	25	0·67	19. 39. 4·80	2·855	6		79. 45. 2·01		6	0·71	2·01	8·416
501	α Aquilæ	32	0·56	19. 43. 24·90	2·929	17		81. 31. 34·99		17	0·48	34·99	9·136
502	57 Sagittarii	1	0·51	19. 43. 25·23	3·498	1		109. 25. 23·74		1	0·51	23·74	8·685
503	ξ Aquilæ	3	0·69	19. 46. 55·79	2·912			81. 55.					
504	β Aquilæ	21	0·66	19. 47. 53·73	2·950	9		83. 57. 57·79		9	0·67	57·79	8·632
505	g Sagittarii	2	0·73	19. 49. 22·87	3·411	2		105. 53. 14·10		2	0·73	14·10	9·162
506	e Draconis	3	0·69	19. 59. 52·05	0·651			25. 36.					
507	α ¹ Capricorni	7	0·70	20. 9. 16·39	3·334	5		102. 58. 13·16		5	0·71	13·16	10·741
508	α ² Capricorni	16	0·65	20. 9. 40·33	3·335	6		103. 0. 29·70		6	0·70	29·70	10·764
509	B. A. C. 6992.....	1	0·73	20. 12. 17·09	3·379	1		105. 15. 23·16		1	0·73	23·16	10·932
510	β Capricorni	1	0·73	20. 12. 31·27	+3·380	1		105. 15. 13·19		1	0·73	13·19	10·999
511	λ Ursæ Minoris.	4	0·48	20. 13. 53·54	—53·037	4		1. 8. 32·04		6	0·55	31·98	11·052
	λ Ursæ Minoris S.P.					2		31·87					
512	B. A. C. 7032.....			20. 18. (40)		2		118. 45. 13·96		2	0·69	13·96	11·407
513	ρ Capricorni	3	0·71	20. 20. 14·51	+3·433			108. 18.					
514	B. A. C. 7044.....	3	0·71	20. 20. 22·92	3·439			108. 22.					
515	ν Capricorni	1	0·73	20. 31. 26·75	3·426			108. 40.					
516	α Cygni	14	0·44	20. 36. 17·20	2·042	15	2	45. 15. 24·45	21·73	17	0·37	24·13	12·646
517	ε Aquarii	2	0·59	20. 39. 29·96	3·259			100. 3.					
518	β Microscopii	1	0·73	20. 42. 35·28	3·755			123. 44.					
519	μ Aquarii	2	0·59	20. 44. 30·24	3·246	1		99. 32. 44·68		1	0·66	44·68	13·160
520	1 Piscis Australis..	2	0·74	20. 52. 1·04	3·705			122. 51.					
521	61 Cygni (1st star).	14	0·75	21. 0. 7·89	2·673	12		51. 59. 23·15		12	0·76	23·15	17·419
522	61 Cygni (2nd star)	13	0·75	21. 0. 9·45	2·673	12		51. 59. 26·79		12	0·76	26·79	17·419
523	3 Piscis Australis..			21. 4. (20)		3		118. 13. 50·64		3	0·70	50·64	14·376
524	ζ Cygni	15	0·67	21. 6. 30·70	2·550	16		60. 23. 21·83		16	0·71	21·83	14·520
525	ι Capricorni	1	0·59	21. 13. 49·94	3·357			107. 28.					
526	α Cephei	15	0·59	21. 14. 58·42	1·438	16	1	28. 3. 10·01	10·90	17	0·63	10·06	15·077
527	5 Piscis Australis..	2	0·70	21. 20. 1·74	3·611			121. 54.					
528	B. A. C. 7469.....	3	0·75	21. 21. 58·08	2·202			44. 14.					
529	6 Piscis Australis..	1	0·79	21. 23. 5·13	3·663			124. 36.					
530	β Aquarii	11	0·74	21. 23. 36·35	3·168	15		96. 13. 55·28		15	0·75	55·28	15·595
531	*			21. 25. (10)		1		74. 53. 47·95		1	0·77	47·95	15·649
532	Weisse XXI. 630.	1	0·79	21. 26. 27·83	2·849	1		75. 5. 3·62		1	0·84	3·62	15·720
533	β ¹ Cephei	1	0·77	21. 26. 38·94	0·806	4		20. 6. 9·07		4	0·79	9·07	15·729
534	Weisse XXI. 637.	3	0·80	21. 26. 40·04	2·848	4		74. 58. 48·10		4	0·79	48·10	15·730
535	β ² Cephei	10	0·64	21. 26. 41·58	0·806	10		20. 6. 5·37		11	0·67	5·30	15·682
	β ² Cephei S.P. ...					1		4·25					
536	Groombridge 3492.	3	0·71	21. 27. 5·72	1·806	3		33. 9. 46·17		3	0·78	46·17	15·754
537	Groombridge 3494.	2	0·77	21. 27. 56·80	+1·809	3		33. 7. 41·77		3	0·78	41·77	—15·800

494. Of the 9th or 10th magnitude.

537. Of the 7th or 8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
538	ξ Aquarii.....			^h ^m ^s 21. 29. (40)	"	5		[°] ['] ["] 98. 31. 41.61	"	5	0.76	41.61	-15.883
539	Groombridge 3510.			21. 31. (10)		2		33. 12. 24.31		2	0.88	24.31	15.973
540	Groombridge 3513.			21. 31. (20)		3		33. 12. 16.60		3	0.87	16.60	15.982
541	γ Capricorni.....	2	0.63	21. 31. 43.09	+3.341	1		107. 20. 26.79		1	0.66	26.79	16.012
542	B. A. C. 7545.....			21. 34. (20)		2		33. 11. 32.84		2	0.91	32.84	16.128
543	*			21. 34. (20)		2		33. 11. 15.06		2	0.91	15.06	16.138
544	*			21. 34. (20)		2		33. 11. 38.84		2	0.91	38.84	16.138
545	Weisse XXI. 896.			21. 36. (40)		3		80. 46. 59.59		3	0.71	59.59	16.260
546	ε Pegasi.....	17	0.78	21. 36. 46.13	2.951	12		80. 48. 52.29		12	0.76	52.29	16.285
547	δ Capricorni.....	1	0.66	21. 38. 42.10	3.323			106. 49.					
548	*			21. 42. (10)		1		20. 42. 49.66		1	0.82	49.66	16.537
549	Lalande 42611....			21. 43. (50)		1		61. 56. 6.93		1	0.93	6.93	16.619
550	*			21. 44. (10)		2		20. 37. 32.56		2	0.74	32.56	16.635
551	*			21. 44. (20)		5		20. 42. 11.31		5	0.76	11.31	16.643
552	B. A. C. 7615.....	3	0.69	21. 44. 53.82	1.753			29. 26.					
553	*	3	0.81	21. 45. 59.73	1.440			24. 20.					
554	*			21. 46. (10)		2		24. 38. 19.63		2	0.75	19.63	16.732
555	*			21. 46. (10)		1		24. 38. 12.93		1	0.93	12.93	16.732
556	20 Pegasi.....	3	0.71	21. 53. 44.01	2.928			77. 36.					
557	*	2	0.93	21. 55. 0.01	2.084			35. 8.					
558	13 Piscis Australis	2	0.82	21. 55. 40.82	3.488			120. 39.					
559	α Aquarii.....	17	0.82	21. 58. 1.57	3.083	17		91. 3. 3.57		17	0.79	3.57	17.289
560	ι Aquarii.....			21. 58. (20)		5		104. 35. 57.38		5	0.75	57.38	17.245
561	*	2	0.93	22. 2. 38.76	2.103			34. 5.					
562	*			22. 2. (40)		4		34. 49. 49.10		4	0.81	49.10	17.484
563	*			22. 2. (40)		2		35. 47. 32.16		2	0.83	32.16	17.484
564	*			22. 3. (0)		1		34. 9. 34.21		1	0.71	34.21	17.498
565	*	2	0.83	22. 3. 27.01	2.106			34. 0.					
566	*			22. 3. (30)		1		34. 42. 22.23		1	0.79	22.23	17.520
567	*			22. 3. (50)		1		33. 41. 31.29		1	0.90	31.29	17.534
568	*			22. 4. (0)		1		34. 32. 49.75		1	0.78	49.75	17.541
569	*			22. 4. (50)		3		34. 39. 27.86		3	0.87	27.86	17.576
570	ζ Cephei.....			22. 5. (40)		2		32. 32. 28.23		2	0.76	28.23	17.601
571	Weisse XXII. 175			22. 8. (40)		3		102. 23. 52.22		3	0.77	52.22	17.734
572	θ Aquarii.....	1	0.97	22. 8. 51.72	3.175			98. 32.					
573	Weisse XXII. 288	1	0.78	22. 14. 10.60	3.194			101. 36.					
574	Lalande 43636....	3	0.90	22. 14. 43.74	3.367			116. 36.					
575	B. A. C. 7810.....	1	0.87	22. 17. 16.06	1.772			24. 3.					
576	*			22. 18. (50)		3		101. 23. 27.72		3	0.79	27.72	18.132
577	β Piscis Australis..			22. 22. (50)		1		123. 7. 4.91		1	0.93	4.91	18.259
578	*			22. 24. (0)		3		36. 58. 49.27		3	0.78	49.27	18.321
579	α Lacertæ.....			22. 25. (0)		1		40. 29. 33.48		1	0.90	33.48	18.346
580	B. A. C. 7897.....	3	0.76	22. 32. 9.81	3.165			100. 9.					
581	ε Piscis Australis..			22. 32. (20)		2		117. 49. 45.97		2	0.90	45.97	18.585
582	ζ Pegasi.....	14	0.82	22. 33. 55.93	2.990	10		79. 57. 18.18		10	0.81	18.18	-18.677
583	*	3	0.94	22. 34. 11.20	+2.805			61. 29.					

553. Of the 11th magnitude.

562, 578. Of the 9th magnitude.

555, 569. Of the 10th magnitude.

565, 576. Of the 10th or 11th magnitude.

561. Of the 8th magnitude.

568. Of the 9.10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—concluded.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1849, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1849, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
584	ο Pegasi	3	0·94	^h 22. 34. 40·27	^s +2·809			^o 61. 29.	"			"	"
585	η Pegasi	1	0·90	22. 35. 55·83	2·805	2		60. 34. 0·25		2	0·94	0·25	—18·710
586	*			22. 41. (50)		1		21. 21. 33·40		1	0·77	33·40	18·899
587	*			22. 42. (0)		3		21. 21. 1·60		3	0·78	1·60	18·904
588	*	3	0·81	22. 44. 15·24	2·108	3		24. 14. 39·59		3	0·82	39·59	18·976
589	λ Aquarii	2	0·78	22. 44. 43·99	3·133	1		98. 22. 54·57		1	0·97	54·57	19·043
590	δ Aquarii	1	0·90	22. 46. 37·98	3·195	1		106. 37. 20·33		1	0·90	20·33	19·055
591	δ Piscis Australis..			22. 47. (30)		4		123. 20. 39·70		4	0·81	39·70	19·158
592	Fomalhaut	8	0·87	22. 49. 17·67	3·335	7		120. 25. 14·13		7	0·86	14·13	18·958
593	ο Andromedæ	1	0·90	22. 54. 59·01	2·745	3		48. 29. 3·27		3	0·90	3·27	19·283
594	α Pegasi	16	0·69	22. 57. 14·56	2·983	12	1	75. 36. 21·25	23·46	13	0·75	21·42	19·304
595	Groombridge 3993.			23. 1. (40)		3		27. 10. 57·96		3	0·79	57·96	19·408
596	*(i)			23. 5. (30)		3		89. 8. 57·04		3	0·82	57·04	19·489
597	φ Aquarii	2	0·75	23. 6. 30·07	3·114	2		96. 51. 43·63		2	0·75	43·63	19·350
598	ψ ³ Aquarii	1	0·90	23. 11. 6·28	3·128	1		100. 26. 7·11		1	0·90	7·11	19·620
599	*	3		23. 12. (10)		2		66. 59. 51·35		2	0·91	51·35	19·619
600	τ Pegasi	3	0·89	23. 13. 10·11	2·961	1		67. 5. 6·47		1	0·91	6·47	19·647
601	Lalande 45976	1	0·82	23. 21. 23·84	2·824	1		42. 11. 8·54		1	0·81	8·54	19·770
602	*	1	0·81	23. 23. 53·24	2·840	1		42. 11. 42·46		1	0·81	42·46	19·806
603	ι Andromedæ	12	0·90	23. 30. 44·67	2·918	3		47. 34. 2·28		3	0·93	2·28	19·941
604	ι Piscium		0·82	23. 32. 11·14	3·085	9		85. 11. 29·31		9	0·86	29·31	19·466
605	γ Cephei	8	0·53	23. 33. 11·96	2·357	8		13. 12. 35·32		10	0·71	35·37	20·079
	γ Cephei S. P.					2		35·59					
606	B. A. C. 8239.			23. 33. (20)		2		102. 31. 0·74		2	0·80	0·74	19·959
607	τ Cassiopeiæ			23. 39. (40)		9		32. 11. 20·24		9	0·87	20·24	20·036
608	20 Piscium	1	0·82	23. 40. 10·77	3·085	1		93. 36. 2·66		1	0·82	2·66	20·000
609	6 Cassiopeiæ	3	0·80	23. 41. 30·66	2·876			28. 37.					
610	Weisse XXIII. 876	3	0·88	23. 42. 43·82	3·096			103. 57.					
611	27 Piscium	3	0·87	23. 50. 56·55	3·072	3		94. 23. 37·28		3	0·87	37·28	19·919
612	ζ Sculptoris			23. 54. (30)		5		120. 33. 41·05		5	0·86	41·05	19·959
613	Groombridge 4206.			23. 55. (0)		3		47. 55. 9·18		3	0·81	9·18	20·050
614	*			23. 55. (30)		3		32. 21. 55·50		3	0·83	55·50	20·051
615	2 Ceti			23. 56. (0)		3		108. 10. 34·65		3	0·92	34·65	20·072
616	33 Piscium	2	0·90	23. 57. 36·33	3·076	2		96. 33. 7·55		2	0·90	7·55	—20·104
617	B. A. C. 8374.	1	0·99	23. 58. 47·13	+3·102			61. 49.					

588. Of the 7·8th magnitude.

596. Of the 11th magnitude.

601. Of about the 7th magnitude.

602. Of the 10th magnitude.

610. Of the 8th magnitude.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1849.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
8	Groombridge 96.	0.11759	0.08393	1.45153	0.11027	80.730	0.01523	9.60542	0.70622	0.11991	134.978
27	<i>f</i> Piscium	0.10163	0.08639	1.44856	0.08031	84.119	9.89288	0.06184	0.76901	0.17637	117.065
46	τ Ceti	0.10157	0.08943	1.44569	0.07251	84.677	9.82351	0.16507	0.82730	0.20714	108.446
53	ζ Ceti	0.10073	0.08983	1.44647	0.07492	84.475	9.83875	0.13758	0.84374	0.21448	109.096
61	Weisse I. 990.	0.09985	0.09067	1.44771	0.07804	84.170	9.86953	0.09602	0.87009	0.22575	109.348
75	δ Ceti	0.09780	0.09378	1.44819	0.07907	83.998	9.89223	0.08079	0.96320	0.25889	104.426
78	B. A. C. 830.	0.09794	0.09421	1.45055	0.08253	83.525	9.94555	0.02653	0.96983	0.26099	104.580
82	π Ceti	0.09806	0.09467	1.44485	0.07432	84.490	9.79344	0.14422	0.97630	0.26309	102.436
86	η Eridani	0.09691	0.09533	1.44592	0.07618	84.316	9.82019	0.12126	1.00695	0.27246	101.412
89 *	{ B. A. C. 951 ϵ Fornacis	0.09859	0.09781	1.44035	0.06956	84.894	9.68766	0.18931	1.02211	0.27692	99.235
90	ρ Persei	0.10080	0.09998	1.45942	0.09267	81.488	0.11008	9.87728	1.02321	0.27725	98.947
101 *	{ R. A. 3 ^h . 20 ^m . (30 ^s). N. P. D. 80°. 46'...	0.09456	0.09757	1.45082	0.08169	83.564	9.95177	0.04018	1.08426	0.29390	96.449
116	Weisse IV. 30.	0.09120	0.09998	1.45268	0.08208	83.455	9.99463	0.03435	1.18076	0.31625	88.297
134	53 Eridani	0.08849	0.10168	1.44323	0.07680	84.622	9.73776	0.11231	1.24134	0.32756	89.886
139	54 Eridani	0.08850	0.10243	1.44121	0.07595	84.778	9.67629	0.12231	1.24649	0.32843	90.580
144	π^1 Orionis	0.08725	0.10149	1.45054	0.08013	83.926	9.94388	0.06481	1.26200	0.33089	83.510
145	π^2 Orionis	0.08721	0.10162	1.45121	0.08041	83.849	9.96034	0.06075	1.26346	0.33106	82.837
146	π^3 Orionis	0.08708	0.10149	1.45008	0.07992	83.989	9.93242	0.06795	1.26497	0.33133	83.669
152	Weisse IV. 1218.	0.08613	0.10237	1.45292	0.08080	83.709	0.00082	0.05475	1.28690	0.33438	79.370
157	β Eridani	0.08536	0.10199	1.44640	0.07861	84.449	9.83183	0.08766	1.29776	0.33576	84.451
163	Weisse V. 54.	0.08517	0.10264	1.45313	0.08061	83.754	0.00372	0.05783	1.30399	0.33650	77.805
167 *	{ R. A. 5 ^h . 10 ^m . (20 ^s). N. P. D. 88°. 27'...	0.08434	0.10214	1.44880	0.07933	84.276	9.89894	0.07709	1.31571	0.33778	81.094
173 *	{ R. A. 5 ^h . 15 ^m . (30 ^s). N. P. D. 72°. 46'...	0.08403	0.10329	1.45450	0.08063	83.677	0.03198	0.05808	1.32521	0.33871	74.607
174	111 Tauri	0.08400	0.10329	1.45451	0.08062	83.678	0.03198	0.05808	1.32521	0.33871	74.607
177	117 Tauri	0.08361	0.10335	1.45447	0.08049	83.713	0.03133	0.05994	1.33161	0.33930	74.073
183 *	{ R. A. 5 ^h . 25 ^m . (40 ^s). N. P. D. 63°. 29'...	0.08320	0.10506	1.45835	0.08098	83.277	0.09795	0.05437	1.34257	0.34021	69.212
187 *	{ R. A. 5 ^h . 29 ^m . (40 ^s). N. P. D. 63°. 29'...	0.08273	0.10512	1.45836	0.08077	83.320	0.09844	0.05717	1.34906	0.34067	68.538
200 *	{ R. A. 5 ^h . 46 ^m . (20 ^s). N. P. D. 63°. 33'...	0.08080	0.10528	1.45841	0.07990	83.498	0.09896	0.06947	1.37667	0.34206	65.746
214	Weisse VI. 334.	0.07796	0.10336	1.44296	0.07948	85.068	9.72665	0.07478	1.41470	0.34220	80.829
217	B. A. C. 2069.	0.07036	0.18126	1.53652	0.07055	71.968	0.31939	0.10483	1.42319	0.34188	39.288
243 *	{ R. A. 7 ^h . 1 ^m . (50 ^s).. N. P. D. 70°. 26'...	0.07230	0.10318	1.45528	0.07689	84.692	0.04677	0.11034	1.48210	0.33522	59.416
249	Lalande 14177.	0.07126	0.10337	1.45627	0.07620	84.717	0.06446	0.11883	1.49222	0.33309	57.027
285	κ Leonis.	0.05830	0.09658	1.45506	0.06989	86.600	0.04490	0.18766	1.60349	0.26865	49.199
297 *	{ R. A. 10 ^h . 11 ^m . (20 ^s) N. P. D. 66°. 40'...	0.05521	0.09113	1.45234	0.06984	87.409	9.99224	0.19100	1.63190	0.21921	53.804
305 *	{ R. A. 10 ^h . 34 ^m . (0 ^s). N. P. D. 17°. 42'...	9.99825	0.10734	1.47138	0.00244	92.422	0.15143	0.31939	1.64008	0.19493	30.858

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1849.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
316	B. A. C. 3875.	0.04913	0.08479	1.44544	0.09568	86.986	9.86657	9.80085	1.65019	0.14331	87.409
329	Groombridge 1867. ...	0.04714	0.07747	1.44733	0.05941	89.974	9.91725	0.26120	1.65347	0.05859	61.075
330	13 Comæ.	0.05132	0.07719	1.44748	0.06677	89.221	9.89207	0.21794	1.65325	0.05187	67.030
338	Weisse XII. 619.	0.05466	0.07536	1.44837	0.08002	88.158	9.88745	0.06642	1.65129	0.01774	81.772
348	Lalande 24610.	0.05540	0.07201	1.44877	0.08114	88.228	9.89889	0.04878	1.64516	9.95743	86.546
352	Weisse XIII. 364. ...	0.05582	0.07055	1.44739	0.07648	88.729	9.86171	0.11755	1.64121	9.92862	85.307
364 *	{ R. A. 13 ^h . 46 ^m . (30 ^s) N. P. D. 92°. 15' ... }	0.05704	0.06822	1.44862	0.08003	88.467	9.89421	0.06630	1.63273	9.87615	90.973
386 *	{ R. A. 14 ^h . 46 ^m . (20 ^s) N. P. D. 27°. 27' ... }	0.03813	0.04300	1.42101	0.04295	95.868	9.61395	0.27046	1.60213	9.72963	91.699
393	♌ Libræ.	0.06239	0.06003	1.45227	0.08331	88.147	9.98642	0.01435	1.58256	9.65232	102.811
413	γ Herculis.	0.06774	0.05558	1.44163	0.07540	89.449	9.69129	0.12946	1.52952	9.48083	115.857
421	β Herculis.	0.06846	0.05478	1.44062	0.07522	89.545	9.66055	0.13083	1.52081	9.45779	117.785
433 *	{ R. A. 16 ^h . 54 ^m . (50 ^s) N. P. D. 110°. 10' ... }	0.07192	0.05378	1.45548	0.08166	87.779	0.05100	0.04254	1.48615	9.38050	111.552
473 *	{ R. A. 18 ^h . 6 ^m . (50 ^s) N. P. D. 118°. 58' ... }	0.08001	0.05070	1.45955	0.07878	87.303	0.11538	0.08438	1.38742	9.30203	112.737
481 *	{ R. A. 18 ^h . 25 ^m . (50 ^s) N. P. D. 70°. 38' ... }	0.08205	0.05299	1.44096	0.08013	88.367	9.66361	0.06546	1.35687	9.31456	136.959
488	γ Lyræ.	0.08574	0.05041	1.43525	0.08271	88.531	9.49305	0.03186	1.30910	9.35607	145.191
531 *	{ R. A. 21 ^h . 25 ^m . (10 ^s) N. P. D. 74°. 54' ... }	0.09823	0.06328	1.44475	0.08423	85.969	9.79085	9.99847	0.97084	9.75940	144.055
542	B. A. C. 7545.	0.11327	0.05219	1.42906	0.10789	85.080	9.66807	9.72145	0.94762	9.78265	159.402
549	Lalande 42611.	0.10127	0.06360	1.44203	0.08971	85.550	9.74312	9.90857	0.92334	9.80634	149.844
550 *	{ R. A. 21 ^h . 44 ^m . (10 ^s) N. P. D. 20°. 37' ... }	0.13259	0.03911	1.41640	0.12936	83.740	9.71950	9.62711	0.92251	9.80722	160.224
554 *	{ R. A. 21 ^h . 46 ^m . (10 ^s) N. P. D. 24°. 38' ... }	0.12497	0.04604	1.42264	0.12100	84.079	9.71391	9.64537	0.91770	9.81178	160.013
561 *	{ R. A. 22 ^h . 2 ^m . (40 ^s) N. P. D. 34°. 5' ... }	0.11517	0.05756	1.43301	0.10921	84.194	9.74115	9.67933	0.87608	9.85132	157.505
564 *	{ R. A. 22 ^h . 3 ^m . (0 ^s) N. P. D. 34°. 9' ... }	0.11514	0.05764	1.43309	0.10915	84.189	9.74186	9.67964	0.87515	9.85208	157.460
565 *	{ R. A. 22 ^h . 3 ^m . (30 ^s) N. P. D. 34°. 0' ... }	0.11532	0.05767	1.43623	0.10935	83.924	9.74327	9.67736	0.87398	9.85325	157.454
576 *	{ R. A. 22 ^h . 18 ^m . (50 ^s) N. P. D. 101°. 23' ... }	0.10089	0.06855	1.45003	0.07477	85.668	9.93394	0.13937	0.83721	9.88769	126.514
578 *	{ R. A. 22 ^h . 24 ^m . (0 ^s) N. P. D. 36°. 59' ... }	0.11435	0.06254	1.43694	0.10751	83.758	9.78810	9.67229	0.82457	9.89943	155.053
586 *	{ R. A. 22 ^h . 41 ^m . (50 ^s) N. P. D. 21°. 21' ... }	0.13754	0.05643	1.43018	0.13377	80.886	9.86368	9.50822	0.78521	9.93746	154.713
600 *	{ R. A. 23 ^h . 12 ^m . (10 ^s) N. P. D. 67°. 0' ... }	0.10409	0.07372	1.44643	0.08908	84.368	9.85697	9.91260	0.73078	9.99686	140.296

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS

AND

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES,

(The Right Ascensions corrected for the Errors of the Assumed Semidiameters of the Sun, the Moon, Venus, and Mars; and the North Polar Distances corrected for the Errors of the Assumed Semidiameters of the Sun and Moon, and for the Alteration in the Moon's Tabular Parallax)

OF THE

SUN, MOON, AND PLANETS,

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC:

WITH

THE INFERRED POSITION OF THE ECLIPTIC, THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE.

1849.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN,
corrected for Refraction and Parallax : compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1849.	m	s	"	'	"	"	1849.	m	s	"	'	"	"
Jan. 2	2. 22.11	21.88	-0.23	32. 35.00	34.60	-0.40	June 26	2. 18.02	17.68	-0.34			
3	2. 21.93	21.78	-0.15	32. 34.30	34.60	+0.30	27	2. 17.88	17.64	-0.24	31. 33.38	30.20	-3.18
9	2. 21.36	21.02	-0.34	32. 33.34	34.20	+0.86	29				31. 34.35	30.20	-4.15
19	2. 19.65	19.22	-0.43				July 2				31. 38.42	30.20	-8.22
22	2. 18.79	18.58	-0.21	32. 32.97	32.20	-0.77	5	2. 17.02	17.10	+0.08	31. 28.83	30.20	+1.37
26	2. 17.58	17.70	+0.12	32. 31.69	31.20	-0.49	6				31. 34.58	30.20	-4.38
31	2. 16.46	16.56	+0.10	32. 29.28	30.00	+0.72	7	2. 17.12	16.90	-0.22	31. 29.12	30.40	+1.28
Feb. 1				32. 30.44	29.60	-0.84	9	2. 17.16	16.66	-0.50	31. 30.44	30.40	-0.04
8	2. 14.81	14.72	-0.09	32. 32.98	27.40	-5.58	10				31. 30.74	30.40	-0.34
12	2. 13.94	13.84	-0.10	32. 25.53	25.80	+0.27	11	2. 16.58	16.42	-0.16	31. 40.05	30.60	-9.45
13	2. 13.84	13.62	-0.22	32. 28.45	25.40	-3.05	12	2. 16.38	16.30	-0.08	31. 35.31	30.60	-4.71
14	2. 13.39	13.42	+0.03	32. 25.52	25.00	-0.52	14	2. 16.06	16.04	-0.02	31. 31.78	30.80	-0.98
15	2. 13.15	13.20	+0.05	32. 31.34	24.60	-6.74	16	2. 16.07	15.76	-0.31	31. 39.24	31.00	-8.24
17	2. 12.81	12.80	-0.01	32. 23.72	23.80	+0.08	21	2. 14.99	15.00	+0.01	31. 35.60	31.80	-3.80
19	2. 12.31	12.40	+0.09				26	2. 13.90	14.16	+0.26	31. 34.60	32.80	-1.80
23	2. 11.52	11.64	+0.12	32. 22.62	21.00	-1.62	28	2. 14.17	13.82	-0.35	31. 33.92	33.20	-0.72
26	2. 11.25	11.14	-0.11	32. 20.53	19.60	-0.93	Aug. 6	2. 12.51	12.30	-0.21	31. 37.14	35.60	-1.54
27	2. 11.08	10.98	-0.10	32. 20.43	19.20	-1.23	7	2. 12.01	12.12	+0.11	31. 36.65	35.80	-0.85
Mar. 2	2. 10.80	10.54	-0.26	32. 22.59	17.80	-4.79	10	2. 11.70	11.62	-0.08	31. 39.24	36.80	-2.44
3	2. 10.44	10.40	-0.04	32. 21.14	17.20	-3.94	11	2. 11.71	11.44	-0.27			
6	2. 9.87	10.00	+0.13				21	2. 10.25	9.92	-0.33	31. 41.34	40.80	-0.54
7	2. 9.81	9.88	+0.07	32. 18.52	15.20	-3.32	25	2. 9.74	9.42	-0.32			
9	2. 9.71	9.66	-0.05	32. 16.72	14.20	-2.52	Sep. 5	2. 8.53	8.38	-0.15	31. 49.50	47.60	-1.90
13	2. 9.55	9.30	-0.25	32. 12.49	12.00	-0.49	6	2. 8.66	8.32	-0.34	31. 49.11	48.00	-1.11
17	2. 9.51	9.02	-0.49	32. 13.88	9.80	-4.08	7	2. 8.39	8.26	-0.13	31. 51.35	48.40	-2.95
31	2. 8.90	8.82	-0.08	32. 1.30	2.20	+0.90	8	2. 8.49	8.22	-0.27			
April 2	2. 8.90	8.90	0.00	32. 6.10	1.00	-5.10	10				31. 52.19	50.00	-2.19
14				31. 60.38	54.60	-5.78	17	2. 8.14	7.98	-0.16	31. 57.15	53.60	-3.55
17				31. 58.34	52.80	-5.54	22	2. 8.17	8.08	-0.09	31. 54.99	56.20	+1.21
25	2. 11.08	11.08	0.00	31. 48.91	48.80	-0.11	25	2. 8.04	8.20	+0.16	31. 59.03	58.00	-1.03
27	2. 11.45	11.36	-0.09	31. 48.35	47.80	-0.55	27	2. 8.23	8.32	+0.09	31. 59.17	59.00	-0.17
30	2. 12.23	11.80	-0.43	31. 52.36	46.40	-5.96	Oct. 5				32. 6.01	3.40	-2.61
May 4	2. 12.74	12.44	-0.30	31. 52.82	44.60	-8.22	10	2. 9.67	9.64	-0.03	32. 7.27	6.20	-1.07
5	2. 12.79	12.62	-0.17	31. 47.67	44.20	-3.47	17	2. 10.92	10.74	-0.18			
15	2. 14.57	14.24	-0.33				18	2. 11.18	10.92	-0.26	32. 13.54	10.40	-3.14
23	2. 15.50	15.50	0.00	31. 37.75	37.00	-0.75	19	2. 11.21	11.10	-0.11	32. 15.14	11.00	-4.14
24	2. 15.71	15.64	-0.07	31. 44.51	36.60	-7.91	20	2. 11.65	11.28	-0.37	32. 12.24	11.60	-0.64
25	2. 16.10	15.78	-0.32	31. 40.56	36.40	-4.16	22	2. 11.77	11.66	-0.11	32. 12.78	12.60	-0.18
26	2. 15.69	15.92	+0.23				24	2. 12.10	12.06	-0.04	32. 14.33	13.80	-0.53
30	2. 16.29	16.44	+0.15	31. 37.86	34.80	-3.06	26	2. 12.45	12.48	+0.03			
June 7	2. 17.33	17.26	-0.07	31. 40.69	33.00	-7.69	29	2. 13.00	13.14	+0.14	32. 16.71	16.40	-0.31
8				31. 34.75	32.60	-2.15	30	2. 13.73	13.36	-0.37	32. 18.34	17.00	-1.34
9	2. 17.60	17.42	-0.18	31. 38.65	32.40	-6.25	31	2. 13.55	13.58	+0.03	32. 18.27	17.40	-0.87
13	2. 17.52	17.64	+0.12	31. 39.13	31.80	-7.33	Nov. 2	2. 14.07	14.02	-0.05			
14	2. 17.48	17.68	+0.20	31. 28.57	31.60	+3.03	5	2. 15.04	14.74	-0.30	32. 21.71	19.80	-1.91
15	2. 17.53	17.72	+0.19	31. 34.97	31.40	-3.57	6	2. 15.08	14.96	-0.12	32. 23.83	20.20	-3.63
18	2. 17.96	17.78	-0.18	31. 35.51	31.00	-4.51	10	2. 15.71	15.92	+0.21	32. 20.40	22.00	+1.60
20	2. 17.82	17.80	-0.02	31. 33.80	30.80	-3.00	12				32. 25.70	22.80	-2.90
22	2. 17.61	17.78	+0.17	31. 38.64	30.60	-8.04	14	2. 16.99	16.88	-0.11	32. 26.08	23.80	-2.28
23	2. 17.90	17.76	-0.14	31. 35.12	30.40	-4.72	16	2. 17.21	17.36	+0.15	32. 26.25	24.60	-1.65
25	2. 17.77	17.72	-0.05	31. 32.44	30.40	-2.04	17	2. 17.82	17.58	-0.24	32. 23.73	25.00	+1.27

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN,
corrected for Refraction and Parallax: compared with those of the Nautical Almanac—concluded.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1849.	m s	s	"	" "	"	"	1849.	m s	s	"	" "	s	"
Nov. 27	2. 20.43	19.76	-0.67	32. 28.18	28.80	+0.62	Dec. 11	2. 22.13	21.86	-0.27	32. 36.24	32.40	-3.84
28	2. 19.98	19.96	-0.02	32. 28.94	29.00	+0.06	17	2. 22.29	22.32	+0.03	32. 31.93	33.40	+1.47
Dec. 1	2. 20.51	20.50	-0.01	32. 35.12	30.00	-5.12	20	2. 23.08	22.42	-0.66	32. 37.25	33.80	-3.45
4	2. 21.26	20.98	-0.28	32. 33.13	30.80	-2.33	27	2. 22.28	22.34	+0.06	32. 32.35	34.40	+2.05
6	2. 21.49	21.26	-0.23				28	2. 22.53	22.30	-0.23	32. 39.39	34.60	-4.79
8	2. 21.36	21.52	+0.16	32. 35.45	31.80	-3.65	31	2. 22.38	22.10	-0.28	32. 34.45	34.60	+0.15

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON:
compared with those of the Nautical Almanac.

Feb. 17				29. 22.53	44.14	(+21.61)	July 4				29. 32.77	29.52	-3.25
							5				29. 42.97	36.34	-6.63
Mar. 2				32. 15.71	12.92	-2.79	31				29. 35.35	31.68	-3.67
4				31. 62.52	59.50	-3.02	Aug. 1				29. 45.33	38.46	-6.87
8	2. 9.21	9.02	-0.19	30. 65.42	59.86	-5.56	3	2. 9.16	9.30	+0.14	30. 10.08	0.56	-9.52
9				30. 41.55	40.46	-1.09							
April 6				30. 27.88	20.04	-7.84	Oct. 2				31. 62.04	58.18	-3.86
7				30. 9.45	5.18	-4.27	31				32. 43.24	40.66	-2.59
11				29. 31.52	30.18	-1.34	Nov. 1				32. 57.45	52.32	-5.13
13				29. 40.49	37.96	-2.53	30				33. 22.87	19.46	-3.41
May 7				29. 41.54	31.66	-9.88	Dec. 28				33. 33.56	26.82	-6.74

VERTICAL DIAMETERS of VENUS, compared with those of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1849.	"	"	"	1849.	"	"	"	1849.	"	"	"
Jan. 6	15.70	15.20	- 0.50	April 30	57.88	53.20	- 4.68	July 11	30.80	26.00	- 4.80
22	18.30	16.80	- 1.50					12	29.82	25.80	- 4.02
26	19.94	17.20	- 2.74	May 3	56.82	55.00	- 1.82	16	26.92	24.40	- 2.52
31	18.34	17.80	- 0.54	4	56.20	55.40	- 0.80	17	25.94	24.20	- 1.74
Feb. 14	21.66	20.00	- 1.66	5	61.32	55.80	- 5.52	24	25.04	22.60	- 2.44
15	20.94	20.20	- 0.74					27	31.06	21.80	- 9.26
17	21.12	20.60	- 0.52	June 4	48.30	45.40	- 2.90	29	27.62	21.40	- 6.22
23	22.30	21.80	- 0.50	6	47.40	44.00	- 3.40	30	29.64	21.20	- 8.44
Mar. 1	22.18	23.20	+ 1.02	8	43.68	42.60	- 1.08	31	23.98	20.80	- 3.18
6	27.06	24.40	- 2.66	13	43.50	39.20	- 4.30				
9	29.32	25.40	- 3.92	17	38.12	36.80	- 1.32	Aug. 1	24.94	20.60	- 4.34
17	32.02	28.00	- 4.02	19	35.52	35.60	+ 0.08	6	23.38	19.60	- 3.78
April 27	52.92	51.40	- 1.52	July 6	27.40	27.80	+ 0.40	10	22.78	19.00	- 3.78
				9	28.74	26.80	- 1.94	14	20.76	18.40	- 2.36
				10	29.74	26.40	- 3.34	Sep. 2	16.74	16.00	- 0.74

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of MARS; and VERTICAL DIAMETERS of MARS :
compared with those of the Nautical Almanac.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1849.	"	"	"	"	"	"	1849.	"	"	"	"	"	"
Nov. 30	1.35	1.10	-0.25	21.14	15.00	-6.14	Dec. 17	1.33	1.14	-0.19	16.40	15.20	-1.20
Dec. 4	1.69	1.12	-0.57	19.97	15.20	-4.77	19	1.35	1.14	-0.21	19.81	15.20	-4.61
8	1.28	1.14	-0.14	20.13	15.20	-4.93	27	1.39	1.10	-0.29	17.84	14.60	-3.24
15	1.12	1.14	+0.02	20.76	15.20	-5.56	28	1.46	1.10	-0.36	18.26	14.60	-3.66
							29	1.20	1.08	-0.12	19.70	14.40	-5.30

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1849.	"	"	"	"	"	"	1849.	"	"	"	"	"	"
Jan. 1	3.23	3.02	-0.21	41.90	40.60	-1.30	Mar. 10	3.23	3.12	-0.11	42.33	41.20	-1.13
2	3.36	3.02	-0.34	42.17	40.80	-1.37	17	3.26	3.04	-0.22	43.55	40.20	-3.35
5	2.78	3.04	+0.26	44.94	41.20	-3.74	20	3.08	3.04	-0.04	40.57	40.00	-0.57
26	3.30	3.14	-0.16	43.92	42.20	-1.72	21	3.30	3.02	-0.28	43.13	39.80	-3.33
31	3.13	3.16	+0.03	45.68	42.40	-3.28	24	3.08	2.98	-0.10	42.33	39.60	-2.73
Feb. 8	3.23	3.18	-0.05	45.42	42.40	-3.02	29	2.78	2.96	+0.18	41.42	39.00	-2.42
12	3.36	3.18	-0.18	45.15	42.40	-2.75	31	3.01	2.94	-0.07	39.72	38.80	-0.92
15	3.13	3.18	+0.05	43.02	42.20	-0.82	April 7	2.88	2.88	0.00	40.78	38.00	-2.78
16	3.38	3.18	-0.20	44.83	42.20	-2.63	14	3.23	2.84	-0.39	39.51	37.20	-2.31
17	3.00	3.18	+0.18	43.55	42.20	-1.35	Nov. 26	2.07	2.36	+0.29	..	..	..
19	3.13	3.16	+0.03	43.92	42.00	-1.92	30	2.35	2.40	+0.05	36.31	33.40	-2.91
26	3.26	3.14	-0.12	43.13	41.80	-1.33	Dec. 5	2.59	2.44	-0.15	34.13	34.00	-0.13
27	3.11	3.14	+0.03	44.30	41.80	-2.50	20	2.93	2.54	-0.39	37.91	35.40	-2.51
Mar. 2	3.43	3.12	-0.31	46.21	41.60	-4.61	23	2.39	2.58	+0.19	37.59	35.80	-1.79
5	3.21	3.12	-0.09	45.36	41.40	-3.96	28	2.45	2.60	+0.15	41.26	36.40	-4.86
6	3.11	3.12	+0.01	43.66	41.40	-2.26							

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN; and VERTICAL DIAMETERS of SATURN :
compared with those of the Nautical Almanac.

Aug. 8	1.23	1.22	-0.01	17.94	17.00	-0.94	Nov. 5	1.23	1.24	+0.01	19.27	17.20	-2.07
15	1.32	1.24	-0.08	20.76	17.20	-3.56	6	1.36	1.24	-0.12	19.54	17.20	-2.34
Sep. 4	1.25	1.26	+0.01	20.66	17.60	-3.06	10	1.34	1.24	-0.10	18.21	17.20	-1.01
5	1.39	1.26	-0.13	19.81	17.60	-2.21	14	1.41	1.24	-0.17	19.17	17.00	-2.17
17	1.20	1.28	+0.08	17.46	17.80	+0.34	16	1.26	1.24	-0.02	17.41	17.00	-0.41
24	1.38	1.28	-0.10	16.66	17.80	+1.14	17	1.31	1.24	-0.07	17.78	17.00	-0.78
25	1.21	1.28	+0.07	19.70	17.80	-1.90	26	1.23	1.20	-0.03	19.59	16.60	-2.99
Oct. 8	1.48	1.24	-0.24	17.36	17.80	+0.44	27	1.20	1.20	0.00	14.54	16.60	+2.06
9	1.18	1.26	+0.08	18.53	17.60	-0.93	29	1.08	1.20	+0.12	20.34	16.60	-3.74
15	1.38	1.26	-0.12	19.38	17.60	-1.78	Dec. 1	1.18	1.20	+0.02	16.88	16.60	-0.28
18	1.36	1.26	-0.10	19.54	17.60	-1.94	6	1.26	1.18	-0.08	16.40	16.60	+0.20
29	1.16	1.26	+0.10	17.30	17.40	+0.10	8	1.21	1.18	-0.03	18.74	16.60	-2.14
Nov. 1	1.23	1.24	+0.01	15.92	17.40	+1.48	17	1.08	1.16	+0.08	15.55	16.20	+0.65
2	1.16	1.24	+0.08	19.17	17.40	-1.77	20	1.36	1.16	-0.20	16.40	16.20	-0.20
							27	1.13	1.16	+0.03	15.97	16.00	+0.03
							29	1.10	1.14	+0.04	18.53	15.80	-2.73

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

	Mean Solar Time of Observation.	R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849.	d h m s	h m s	s	s	° ' "	"	"
Jan.	2. 0. 4. 26.2	18. 52. 28.44	28.38	— 0.06	112. 54. 29.01	29.50	+ 0.49
	3. 0. 4. 54.4	18. 56. 53.25	52.78	— 0.47	112. 48. 43.55	44.30	+ 0.75
	9. 0. 7. 31.0	19. 23. 9.66	9.54	— 0.12	112. 4. 49.82	49.00	— 0.82
	19. 0. 11. 6.7	20. 6. 11.26	11.16	— 0.10	110. 17. 33.86	36.10	+ 2.24
	22. 0. 11. 57.4	20. 18. 52.01	52.16	+ 0.15	109. 37. 44.68	44.90	+ 0.22
	24. 0. 12. 27.5	20. 27. 15.72	15.64	— 0.08	109. 9. 18.73	21.10	+ 2.37
	26. 0. 12. 54.9	20. 35. 35.87	35.91	+ 0.04	108. 39. 33.35	33.00	— 0.35
	27. 0. 13. 7.2	.....	...	...	108. 24. (3.65)	8.40	(+ 4.75)
	31. 0. 13. 48.3	20. 56. 12.22	12.06	— 0.16	107. 19. 14.48	15.30	+ 0.82
Feb.	1. 0. 13. 56.7	21. 0. 16.96	16.76	— 0.20	107. 2. 15.56	15.40	— 0.16
	8. 0. 14. 29.7	21. 28. 26.23	26.26	+ 0.03	104. 55. 16.73	18.80	+ 2.07
	12. 0. 14. 31.4	21. 44. 14.11	14.06	— 0.05	103. 37. 8.42	7.00	— 1.42
	13. 0. 14. 30.1	21. 48. 9.39	9.12	— 0.27	103. 16. 59.23	59.50	+ 0.27
	14. 0. 14. 27.7	21. 52. 3.49	3.45	— 0.04	102. 56. 39.25	39.10	— 0.15
	15. 0. 14. 24.7	21. 55. 57.07	57.05	— 0.02	102. 36. 6.42	6.00	— 0.42
	17. 0. 14. 16.7	22. 3. 42.10	42.16	+ 0.06	101. 54. 23.64	23.70	+ 0.06
	19. 0. 14. 6.2	22. 11. 24.73	24.53	— 0.20	101. 11. 53.93	56.10	+ 2.17
	23. 0. 13. 36.7	22. 26. 41.38	41.38	0.00	99. 44. 60.37	58.40	— 1.97
	26. 0. 13. 8.5	22. 38. 2.78	2.51	— 0.27	98. 38. 11.78	11.20	— 0.58
	27. 0. 12. 57.7	22. 41. 48.41	48.39	— 0.02	98. 15. 41.46	39.80	— 1.66
Mar.	2. 0. 12. 22.4	22. 53. 2.92	2.72	— 0.20	97. 7. 28.40	24.40	— 4.00
	3. 0. 12. 9.9	22. 56. 46.50	46.46	— 0.04	96. 44. 24.74	26.90	+ 2.16
	6. 0. 11. 28.6	23. 7. 54.95	54.83	— 0.12	95. 35. (8.17)	2.60	(— 5.57)
	7. 0. 11. 13.9	23. 11. 36.81	36.74	— 0.07	95. 11. 45.67	45.10	— 0.57
	8. 0. 10. 58.9	.....	...	...	94. 48. 24.24	23.60	— 0.64
	9. 0. 10. 43.6	23. 18. 59.47	59.38	— 0.09	94. 24. 60.27	58.40	— 1.87
	13. 0. 9. 39.0	23. 33. 40.78	40.64	— 0.14	92. 50. 47.27	48.00	+ 0.73
	17. 0. 8. 29.9	23. 48. 17.89	17.75	— 0.14	91. 16. 7.15	7.40	+ 0.25
	31. 0. 4. 14.6	0. 39. 13.60	13.30	— 0.30	85. 46. 26.01	25.90	— 0.11
Apr.	2. 0. 3. 37.7	0. 46. 29.70	29.85	+ 0.15	85. 0. 11.46	12.20	+ 0.74
	4. 0. 3. 1.9	0. 53. 46.85	46.84	— 0.01	.....	...	...
	14. 0. 0. 15.1	1. 30. 25.17	24.62	— 0.55	80. 31. 53.06	54.70	+ 1.64
	16. 23. 59. 30.4	1. 41. 30.00	30.07	+ 0.07	79. 27. 58.91	57.70	— 1.21
	24. 23. 57. 51.2	2. 11. 22.95	23.09	+ 0.14	76. 45. 23.63	24.20	+ 0.57
	26. 23. 57. 31.2	2. 18. 55.96	55.93	— 0.03	76. 6. 49.32	49.60	+ 0.28
	29. 23. 57. 4.6	2. 30. 18.94	18.90	— 0.04	75. 10. 42.13	41.20	— 0.93
May	3. 23. 56. 36.4	2. 45. 36.95	36.78	— 0.17	73. 59. 17.64	17.10	— 0.54
	4. 23. 56. 30.5	2. 49. 27.54	27.60	+ 0.06	73. 42. 7.80	5.10	— 2.70
	14. 23. 56. 5.0	3. 28. 27.52	27.42	— 0.10	71. 5. 43.47	44.90	+ 1.43
	22. 23. 56. 26.3	4. 0. 21.39	21.24	— 0.15	69. 23. 16.47	18.00	+ 1.53
	23. 23. 56. 31.4	4. 4. 23.05	22.91	— 0.14	69. 12. 3.28	2.20	— 1.08
	24. 23. 56. 36.9	4. 8. 25.12	25.08	— 0.04	69. 1. 8.09	7.80	— 0.29
	25. 23. 56. 43.1	4. 12. 27.93	27.75	— 0.18	68. 50. 35.25	35.00	— 0.25
	29. 23. 57. 11.9	4. 28. 42.98	42.95	— 0.03	68. 12. 5.53	5.00	— 0.53
	31. 23. 57. 28.9	4. 36. 53.16	53.08	— 0.08	67. 55. 5.47	5.50	+ 0.03
June	4. 23. 58. 7.3	4. 53. 17.90	17.89	— 0.01	67. 25. 43.69	44.80	+ 1.11
	6. 23. 58. 28.7	5. 1. 32.40	32.33	— 0.07	67. 13. 23.03	26.00	+ 2.97
	7. 23. 58. 39.7	.....	...	...	67. 7. 48.77	52.50	+ 3.73
	8. 23. 58. 51.3	5. 9. 48.18	47.97	— 0.21	67. 2. 42.48	43.00	+ 0.52
	12. 23. 59. 39.1	5. 26. 22.41	22.29	— 0.12	66. 46. 6.50	7.90	+ 1.40
	13. 23. 59. 51.7	5. 30. 31.58	31.40	— 0.18	66. 42. 58.17	60.20	+ 2.03
	15. 0. 0. 4.2	5. 34. 40.63	40.66	+ 0.03	66. 40. 17.74	17.10	— 0.64
	18. 0. 0. 43.2	5. 47. 9.41	9.15	— 0.26	66. 34. 35.50	35.90	+ 0.40
	20. 0. 1. 9.1	5. 55. 28.50	28.50	0.00	66. 32. 54.86	52.20	— 2.66

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—*continued.*

	Mean Solar Time of Observation.				R. A. from Observation.			Seconds of Tabular R. A.		Apparent Error of Tables in R. A.		N. P. D. from Observation.		Seconds of Tabular N. P. D.		Apparent Error of Tables in N. P. D.	
1849.	d	h	m	s	h	m	s	s	s	°	'	"	"	"	"		
June	21.	0.	1.22	.1	5.59.38	.14	38.18	+ 0.04	66.32.36	.23	37.50	+ 1.27					
	22.	0.	1.35	.5	6. 3.47	.98	47.84	— 0.14	66.32.46	.39	47.70	+ 1.31					
	23.	0.	1.48	.5	6. 7.57	.64	57.45	— 0.19	66.33.21	.61	22.70	+ 1.09					
	25.	0.	2.14	.1	6.16.16	.51	16.37	— 0.14	66.35.46	.47	46.80	+ 0.33					
	26.	0.	2.26	.9	6.20.25	.87	25.63	— 0.24	66.37.36	.63	36.00	— 0.63					
	27.	0.	2.39	.5	6.24.35	.06	34.75	— 0.31	66.39.48	.01	49.80	+ 1.79					
	29.	0.	3. 3	.7	.....	...	...	...	66.45.30	.30	31.20	+ 0.90	
July	2.	0.	3.38	.6	.....	...	...	...	66.57. 4	.89	6.40	+ 1.51	
	5.	0.	4.11	.0	6.57.39	.22	39.24	+ 0.02	67.12.18	.04	18.90	+ 0.86					
	6.	0.	4.21	.1	7. 1.45	.98	45.96	— 0.02	67.18.11	.19	10.80	— 0.39					
	7.	0.	4.30	.8	7. 5.52	.26	52.34	+ 0.08	67.24.26	.83	26.30	— 0.53					
	9.	0.	4.49	.2	7.14. 3	.82	3.99	+ 0.17	67.38. 8	.24	7.80	— 0.44					
	10.	0.	4.58	.3	7.18. 9	.50	9.23	— 0.27	67.45.33	.13	33.30	+ 0.17					
	11.	0.	5. 6	.6	7.22.13	.94	14.06	+ 0.12	67.53.20	.94	21.90	+ 0.96					
	12.	0.	5.14	.3	7.26.18	.58	18.47	— 0.11	68. 1.32	.99	33.30	+ 0.31					
	14.	0.	5.28	.7	7.34.26	.15	25.95	— 0.20	68.19. 4	.96	3.80	— 1.16					
	16.	0.	5.41	.1	7.42.31	.74	31.58	— 0.16	68.38. 3	.26	3.30	+ 0.04					
	21.	0.	6. 3	.4	8. 2.36	.88	36.66	— 0.22	69.31.47	.51	49.50	+ 1.99					
	26.	0.	6.11	.2	8.22.27	.45	27.55	+ 0.10	70.34. 8	.34	11.00	+ 2.66					
	28.	0.	6.10	.2	8.30.19	.56	19.66	+ 0.10	71. 1.21	.70	24.60	+ 2.90					
	31.	0.	6. 4	.0	8.42. 3	.02	3.16	+ 0.14	71.44.32	.86	34.70	+ 1.84					
Aug.	6.	0.	5.35	.2	9. 5.13	.51	13.61	+ 0.10	73.18.49	.68	51.10	+ 1.42					
	7.	0.	5.28	.5	9. 9. 3	.33	3.27	— 0.06	73.35.30	.58	32.20	+ 1.62					
	10.	0.	5. 4	.2	9.20.28	.65	28.83	+ 0.18	74.27. 7	.76	9.90	+ 2.14					
	11.	0.	4.55	.2	9.24.16	.10	16.24	+ 0.14	.....	...	...	...	
	18.	0.	3.36	.8	9.50.33	.39	33.23	— 0.16	76.55.30	.98	28.40	— 2.58					
	21.	0.	2.55	.1	10. 1.41	.20	41.49	+ 0.29	77.54.37	.61	40.00	+ 2.39					
	25.	0.	1.53	.5	10.16.25	.66	25.97	+ 0.31	79.16.12	.39	14.60	+ 2.21					
	28.	0.	1. 3	.0	10.27.24	.74	24.83	+ 0.09	80.19.(19.09)	...	13.30	(— 5.79)					
Sep.	4.	23.58.	32.8	10.56.26	.49	26.63	+ 0.14	83.13.32	.54	31.60	— 0.94						
	5.	23.58.	12.9	11. 0. 3	.16	3.18	+ 0.02	83.35.52	.88	52.30	— 0.58						
	6.	23.57.	52.4	11. 3.39	.16	39.53	+ 0.37	83.58.18	.58	19.40	+ 0.82						
	7.	23.57.	32.8	11. 7.16	.00	15.70	— 0.30	84.20.51	.12	52.70	+ 1.58						
	9.	23.56.	51.1	11.14.27	.32	27.63	+ 0.31	85. 6.15	.41	16.20	+ 0.79						
	10.	23.56.	30.8	11.18. 3	.53	3.42	— 0.11	85.29. 6	.13	5.80	— 0.33						
	16.	23.54.	25.2	11.39.36	.82	36.74	— 0.08	87.47.34	.60	32.30	— 2.30						
	21.	23.52.	40.4	11.57.34	.59	34.51	— 0.08	89.44.11	.74	12.50	+ 0.76						
	24.	23.51.	38.6	12. 8.22	.19	22.15	— 0.04	90.54.25	.75	26.90	+ 1.15						
	26.	23.50.	58.1	12.15.34	.75	34.62	— 0.13	91.41.16	.14	16.60	+ 0.46						
	27.	23.50.	38.1	12.19.11	.18	11.14	— 0.04	92. 4.40	.90	40.40	— 0.50						
	Oct.	4.	23.48.	25.7	.....	...	...	...	94.47.37	.62	36.90	— 0.72	
		9.	23.47.	2.2	13. 2.53	.32	53.31	— 0.01	96.42.25	.67	21.90	— 3.77					
16.		23.45.	26.1	13.28.52	.83	52.93	+ 0.10	99.19.10	.71	7.50	— 3.21						
17.		23.45.	14.8	13.32.38	.09	38.00	— 0.09	99.41. 0	.98	2.20	+ 1.22						
18.		23.45.	3.9	13.36.23	.73	23.68	— 0.05	100. 2.48	.98	48.40	— 0.58						
19.		23.44.	53.8	13.40.10	.13	9.99	— 0.14	100.24.29	.01	25.70	— 3.31						
21.		23.44.	35.1	13.47.44	.51	44.51	0.00	101. 7.13	.37	12.20	— 1.17						
23.		23.44.	19.4	13.55.21	.84	21.68	— 0.16	101.49.17	.36	18.30	+ 0.94						
25.		23.44.	6.2	14. 3. 1	.68	1.61	— 0.07	102.30.41	.87	40.70	— 1.17						
28.		23.43.	51.8	14.14.36	.95	36.94	— 0.01	103.31.16	.70	15.80	— 0.90						
29.		23.43.	48.6	14.18.30	.27	30.23	— 0.04	103.51. 4	.71	2.20	— 2.51						
30.		23.43.	46.2	14.22.24	.41	24.29	— 0.12	104.10.35	.13	35.40	+ 0.27						
Nov.		1.	23.43.	43.7	14.30.14	.97	14.82	— 0.15	104.49. 2	.75	0.40	— 2.35					
	4.	23.43.	45.9	14.42. 6	.90	6.78	— 0.12	105.44.48	.39	48.60	+ 0.21						

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—*concluded*.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849.	d h m s	h m s	s	s	° ' "	"	"
Nov.	5. 23. 43. 48.3	14. 46. 5.85	5.78	— 0.07	106. 2. 54.87	54.00	— 0.87
	9. 23. 41. 6.7	15. 2. 10.51	10.41	— 0.10	107. 12. 31.59	31.40	— 0.19
	11. 23. 44. 21.1	15. 10. 18.04	17.93	— 0.11	107. 45. 38.93	35.90	— 3.03
	13. 23. 44. 38.9	15. 18. 29.03	28.91	— 0.12	108. 17. 28.07	26.70	— 1.37
	15. 23. 45. 0.3	15. 26. 43.55	43.28	— 0.27	108. 48. 1.50	0.30	— 1.20
	16. 23. 45. 11.9	15. 30. 51.77	51.72	— 0.05	109. 2. 48.05	47.30	— 0.75
	26. 23. 47. 53.8	16. 12. 59.69	59.79	+ 0.10	111. 10. 49.30	48.30	— 1.00
	27. 23. 48. 14.2	16. 17. 16.66	16.70	+ 0.04	111. 21. 27.46	29.80	+ 2.34
	30. 23. 49. 19.2	16. 30. 11.47	11.52	+ 0.05	111. 51. 5.80	7.10	+ 1.30
Dec.	3. 23. 50. 29.9	16. 43. 12.12	12.16	+ 0.04	112. 16. 57.11	58.00	+ 0.89
	5. 23. 51. 20.0	16. 51. 55.49	55.55	+ 0.06	112. 32. 3.07	2.60	— 0.47
	7. 23. 52. 12.4	17. 0. 41.06	41.10	+ 0.04	112. 45. 22.42	21.60	— 0.82
	10. 23. 53. 34.2	17. 13. 53.03	52.95	— 0.08	113. 1. 58.28	58.50	+ 0.22
	16. 23. 56. 27.8	17. 40. 26.21	26.16	— 0.05	113. 22. 48.69	48.90	+ 0.21
	19. 23. 57. 56.5	17. 53. 45.37	45.53	+ 0.16	113. 26. 56.37	55.80	— 0.57
	27. 0. 1. 26.3	18. 24. 51.09	51.14	+ 0.05	113. 20. 1.01	1.40	+ 0.39
	28. 0. 1. 55.9	18. 29. 17.34	17.21	— 0.13	113. 17. 9.03	9.20	+ 0.17
	31. 0. 3. 22.8	18. 42. 34.20	34.09	— 0.11	113. 5. 43.14	44.80	+ 1.66

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER.

Jan.	2. 6. 21. 51.4	1. 10. 55.72	56.11	+ 0.39	85. 32. 8.10	7.00	— 1.10
	6. 10. 5. 59.8	5. 11. 27.12	27.65	+ 0.53	72. 5. 33.58	30.60	— 2.98
	8. 12. 7. 58.7	7. 21. 39.13	39.87	+ 0.74	72. 2. 20.38	18.70	— 1.68
	10. 14. 2. 8.2	9. 24. 0.56	1.45	+ 0.89	76. 55. 45.41	46.60	+ 1.19
	14. 17. 14. 5.3	12. 52. 15.40	15.89	+ 0.49	92. 49. 28.65	28.90	+ 0.25
	15. 17. 57. 53.7	13. 40. 7.59	8.26	+ 0.67	96. 41. 7.35	7.80	+ 0.45
	17. 19. 25. 47.8	15. 16. 9.19	9.85	+ 0.66	103. 14. 15.88	18.90	+ 3.02
	28. 3. 30. 13.1	0. 1. 19.66	19.74	+ 0.08	91. 32. 25.18	19.30	— 5.88
	31. 6. 2. 41.6	2. 46. 2.89	2.95	+ 0.06	78. 41. 39.12	37.70	— 1.42
Feb.	4. 9. 51. 52.5	6. 51. 37.82	38.41	+ 0.59	71. 37. 16.23	13.80	— 2.43
	8. 13. 31. 14.2	10. 47. 21.55	22.48	+ 0.93	82. 28. 44.74	42.80	— 1.94
	10. 15. 5. 55.4	12. 30. 11.44	12.43	+ 0.99	90. 50. 7.74	9.50	+ 1.76
	11. 15. 50. 58.9	13. 19. 18.84	19.58	+ 0.74	94. 52. 49.33	52.90	+ 3.57
	12. 16. 35. 25.1	14. 7. 48.94	49.41	+ 0.47	98. 36. 46.10	49.30	+ 3.20
	13. 17. 19. 51.5	14. 56. 19.16	19.66	+ 0.50	101. 54. 8.79	12.70	+ 3.91
	16. 19. 37. 45.0	17. 26. 25.06	25.28	+ 0.22	108. 1. (38.85)	53.30	(+ 14.45)
	17. 20. 25. 54.7	18. 18. 39.14	39.30	+ 0.16	108. 30. (17.57)	18.60	(+ 1.03)
	27. 3. 59. 24.0	2. 28. 51.97	52.52	+ 0.55	79. 55. 7.47	6.50	— 0.97
Mar.	1. 5. 49. 22.1	4. 27. 1.23	1.47	+ 0.24	73. 36. 2.01	0.40	— 1.61
	2. 6. 46. 25.8	5. 28. 10.85	10.95	+ 0.10	71. 57. 25.27	22.30	— 2.97
	4. 8. 41. 0.5	7. 30. 57.51	58.34	+ 0.83	72. 19. 26.34	24.40	— 1.94
	5. 9. 36. 34.8	8. 30. 37.49	38.21	+ 0.72	74. 15. 33.89	31.30	— 2.59
	8. 12. 10. 3.3	11. 16. 20.81	21.58	+ 0.77	84. 43. 53.64	54.10	+ 0.46
	9. 12. 57. 9.5	12. 7. 31.36	31.93	+ 0.57	88. 55. 41.04	40.70	— 0.34
	10. 13. 42. 58.1	12. 57. 23.99	24.74	+ 0.75	93. 4. 61.29	59.50	— 1.79
	16. 18. 17. 33.9	17. 56. 24.17	24.67	+ 0.50	108. 24. 48.75	53.70	+ 4.95
	31. 6. 36. 42.4	7. 12. 45.84	46.16	+ 0.32	71. 53. 42.82	36.10	— 6.72
Apr.	1. 7. 32. 13.1	8. 12. 22.18	22.97	+ 0.79	73. 29. 17.17	17.20	+ 0.03
	2. 8. 25. 25.9	9. 9. 40.34	41.22	+ 0.88	76. 3. 34.22	33.30	— 0.92
	5. 10. 51. 38.9	11. 48. 6.99	7.38	+ 0.39	87. 18. 45.30	41.40	— 3.90

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER—*continued*.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849.	d h m s	h m s	s	s	° ' "	"	"
Apr.	6. 11. 37. 16.6	12. 37. 48.73	48.97	+ 0.24	91. 28. 42.49	38.10	— 4.39
	7. 12. 22. 14.6	13. 26. 50.63	51.14	+ 0.51	95. 30. 34.36	33.70	— 0.66
	8. 13. 7. 3.3	14. 15. 43.26	43.90	+ 0.64	99. 13. 57.29	62.30	+ 5.01
	11. 15. 24. 0.1	16. 44. 52.20	52.51	+ 0.31	107. 8. 1.56	9.60	+ 8.04
	13. 16. 58. 32.2	18. 27. 32.95	33.34	+ 0.39	108. 38. 2.86	13.60	+ 10.74
	15. 18. 34. 48.5	20. 11. 58.24	58.92	+ 0.68	106. 37. 9.47	13.30	+ 3.83
	16. 19. 23. 18.6	21. 4. 32.78	33.24	+ 0.46	104. 17. 57.65	63.90	+ 6.25
	27. 4. 30. 4.0	6. 52. 13.58	14.00	+ 0.42	71. 26. 15.51	4.10	— 11.41
	28. 5. 27. 38.7	7. 53. 54.31	54.58	+ 0.27	72. 41. 31.26	25.00	— 6.26
May	3. 9. 35. 8.6	12. 21. 47.58	47.96	+ 0.38	90. 2. 59.32	55.10	— 4.22
	4. 10. 19. 37.6	13. 10. 20.46	20.75	+ 0.29	94. 7. 56.20	55.20	— 1.00
	5. 11. 3. 54.8	13. 58. 41.46	41.76	+ 0.30	97. 58. 54.16	53.20	— 0.96
	7. 12. 33. 42.9	15. 36. 37.45	37.78	+ 0.33	104. 22. 7.17	10.20	+ 3.03
	26. 4. 14. 44.7	8. 31. 11.87	12.30	+ 0.43	73. 48. 11.54	10.00	— 1.54
	27. 5. 9. 17.3	9. 29. 49.96	50.00	+ 0.04	76. 45. 42.35	39.20	— 3.15
	29. 6. 48. 24.2	11. 17. 6.28	6.46	+ 0.18	84. 24. 32.43	25.40	— 7.03
	31. 8. 18. 51.8	12. 55. 41.77	42.09	+ 0.32	92. 44. 5.29	2.00	— 3.29
June	1. 9. 2. 50.8	13. 43. 44.59	44.87	+ 0.28	96. 41. 25.13	23.70	— 1.43
	2. 9. 46. 54.7	14. 31. 52.26	52.66	+ 0.40	100. 18. 25.91	27.20	+ 1.29
	3. 10. 31. 33.4	15. 20. 34.92	35.29	+ 0.37	103. 26. 56.90	56.90	0.00
	9. 15. 14. 1.5	....	...	...	106. 28. 34.13	41.50	+ 7.37
	11. 16. 48. 5.0	22. 9. 40.80	41.46	+ 0.66	100. 50. 43.35	49.10	+ 5.75
	13. 18. 22. 23.3	23. 52. 7.70	8.38	+ 0.63	92. 50. 30.93	44.70	+ 13.77
	24. 3. 52. 9.4	10. 2. 53.02	53.75	+ 0.73	78. 36. 28.01	26.30	— 1.71
	27. 6. 16. 43.4	12. 39. 40.40	40.60	+ 0.20	91. 7. 22.34	24.20	+ 1.86
July	4. 11. 35. 37.3	18. 27. 2.61	2.71	+ 0.10	108. 59. 21.73	28.00	+ 6.27
	5. 12. 23. 43.5	19. 19. 13.19	13.47	+ 0.28	108. 32. 23.51	29.20	+ 5.69
	6. 13. 11. 45.4	20. 11. 19.59	20.07	+ 0.48	107. 11. 37.00	40.60	+ 3.60
	7. 13. 59. 23.0	21. 3. 1.54	2.22	+ 0.68	105. 0. 10.53	13.30	+ 2.77
	8. 14. 46. 28.0	21. 54. 10.87	11.90	+ 1.03	102. 3. 42.87	45.70	+ 2.83
	9. 15. 33. 9.2	22. 44. 56.28	56.77	+ 0.49	98. 29. 45.64	47.30	+ 1.66
	10. 16. 19. 47.8	23. 35. 39.08	39.85	+ 0.77	94. 27. 5.70	8.20	+ 2.50
	11. 17. 7. 0.6	0. 26. 56.25	57.12	+ 0.87	90. 5. 54.69	54.00	— 0.69
	24. 4. 10. 27.1	12. 19. 30.69	31.38	+ 0.69	89. 12. 0.03	2.00	+ 1.97
	27. 6. 26. 26.0	14. 47. 41.30	41.64	+ 0.34	....	...	...
	28. 7. 11. 28.0	15. 36. 47.24	47.62	+ 0.38	104. 4. 19.53	26.90	+ 7.37
	29. 7. 57. 11.6	16. 26. 34.86	35.16	+ 0.30	106. 26. 47.57	56.20	+ 8.63
	30. 8. 43. 48.6	17. 17. 16.14	16.44	+ 0.30	108. 4. 14.36	24.50	+ 10.14
	31. 9. 31. 17.6	18. 8. 49.51	49.59	+ 0.08	108. 51. 41.41	50.20	+ 8.79
Aug.	1. 10. 19. 23.7	19. 1. 0.02	0.28	+ 0.26	108. 45. 36.14	44.40	+ 8.26
	3. 11. 55. 59.1	20. 45. 44.44	44.69	+ 0.25	105. 50. 55.29	61.60	+ 6.31
	4. 12. 43. 49.0	21. 37. 38.67	39.23	+ 0.56	103. 8. 32.53	37.60	+ 5.07
	6. 14. 18. 17.0	23. 20. 15.38	15.94	+ 0.56	95. 49. 6.18	8.20	+ 2.02
	8. 15. 53. 24.6	1. 3. 31.71	32.43	+ 0.72	87. 5. 59.02	58.20	— 0.82
	11. 18. 28. 2.1	3. 50. 24.23	25.04	+ 0.81	75. 15. 27.08	25.00	— 2.08
	23. 4. 20. 13.1	14. 27. 34.62	35.67	+ 1.05	....	...	...
	24. 5. 5. 47.0	15. 17. 12.52	13.03	+ 0.51	102. 52. 4.70	10.00	+ 5.30
	29. 9. 1. 13.4	19. 33. 0.43	0.71	+ 0.28	108. 13. 8.56	16.10	+ 7.54
	31. 10. 37. 51.6	21. 17. 47.61	47.90	+ 0.29	104. 15. 24.53	31.40	+ 6.87
Sep.	5. 14. 39. 55.7	1. 40. 14.22	14.62	+ 0.40	84. 3. 59.53	62.50	+ 2.97
	8. 17. 19. 30.5	4. 32. 4.91	5.51	+ 0.60	73. 22. 56.00	56.60	+ 0.60
	9. 18. 16. 40.5	5. 33. 20.87	21.58	+ 0.71	71. 37. 18.39	17.70	— 0.68
	22. 4. 31. 1.0	16. 36. 40.85	41.35	+ 0.50	106. 50. 19.75	17.40	— 2.35
	25. 6. 53. 21.0	19. 11. 13.93	13.90	— 0.03	108. 39. 56.81	62.20	+ 5.39

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER—concluded.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
	1849. d h m s	h m s	s	s	° ' "	"	"
Sep.	26. 7. 41. 17.7	20. 3. 15.06	15.10	+ 0.04	107. 29. 35.99	42.40	+ 6.41
	30. 10. 53. 31.5	23. 31. 46.62	47.00	+ 0.38	94. 52. 48.97	56.20	+ 7.23
Oct.	2. 12. 32. 45.6	1. 19. 10.14	10.99	+ 0.85	85. 44. 34.99	39.70	+ 4.71
	4. 14. 18. 26.8	3. 13. 1.74	2.58	+ 0.84	77. 16. 25.62	29.20	+ 3.58
	5. 15. 14. 19.1	4. 12. 59.79	60.45	+ 0.66	74. 3. 43.93	44.80	+ 0.87
	8. 18. 8. 20.1	7. 19. 19.10	19.61	+ 0.51	71. 22. 47.27	49.50	+ 2.23
	9. 19. 5. 6.5	8. 20. 11.29	12.15	+ 0.86	73. 0. 26.52	23.10	— 3.42
	28. 9. 30. 47.3	23. 59. 12.29	12.71	+ 0.42	92. 39. 47.43	54.10	+ 6.67
	29. 10. 20. 23.2	0. 52. 52.86	53.35	+ 0.49	88. 0. 32.71	38.60	+ 5.89
	30. 11. 11. 58.8	.....	...	...	83. 19. 25.67	28.00	+ 2.33
	31. 12. 6. 0.8	2. 46. 40.98	41.90	+ 0.92	78. 55. 40.18	40.80	+ 0.62
Nov.	1. 13. 2. 42.6	3. 47. 28.67	29.37	+ 0.70	75. 10. 58.88	59.40	+ 0.52
	4. 16. 2. 6.9	6. 59. 12.11	12.91	+ 0.80	70. 53. 35.97	36.10	+ 0.13
	5. 17. 0. 41.1	8. 1. 52.41	53.34	+ 0.93	72. 9. 32.39	31.80	— 0.59
	22. 5. 47. 45.4	21. 54. 7.58	8.09	+ 0.51	102. 35. 54.12	60.40	+ 6.28
	24. 7. 20. 10.9	23. 34. 41.46	42.19	+ 0.73	94. 59. 14.54	20.10	+ 5.56
	25. 8. 7. 41.5	0. 26. 16.40	17.36	+ 0.96	90. 31. 21.41	25.30	+ 3.89
	26. 8. 57. 5.4	1. 19. 44.91	45.73	+ 0.82	85. 51. 39.08	41.30	+ 2.22
	27. 9. 49. 9.0	2. 15. 53.66	54.53	+ 0.87	81. 15. 38.77	43.40	+ 4.63
	30. 12. 44. 38.5	5. 23. 41.68	42.46	+ 0.78	71. 23. 35.92	34.80	— 1.12
Dec.	1. 13. 47. 20.4	6. 30. 30.36	31.37	+ 1.01	70. 34. 47.62	37.90	— 9.72
	4. 16. 44. 50.0	9. 40. 18.84	19.56	+ 0.72	76. 25. 21.23	15.90	— 5.33
	5. 17. 37. 17.4	10. 36. 51.44	52.16	+ 0.72	80. 15. 56.62	52.90	— 3.72
	6. 18. 26. 39.5	11. 30. 18.16	19.40	+ 1.24	84. 31. 44.03	40.60	— 3.43
	8. 19. 59. 25.2	13. 11. 12.21	13.00	+ 0.79	93. 18. 48.39	43.40	— 4.99
	20. 4. 29. 32.5	22. 26. 5.48	5.92	+ 0.44	100. 40. 52.12	51.60	— 0.52
	21. 5. 14. 38.3	23. 15. 15.26	15.51	+ 0.25	96. 53. 2.30	0.60	— 1.70
	23. 6. 46. 49.7	0. 55. 34.88	35.63	+ 0.75	88. 12. 18.77	16.60	— 2.17
	27. 10. 22. 4.5	4. 47. 11.25	12.17	+ 0.92	72. 31. 12.58	9.00	— 3.58
	28. 11. 24. 24.7	5. 53. 38.26	39.20	+ 0.94	70. 49. 12.78	12.50	— 0.28
	29. 12. 28. 7.6	7. 1. 28.20	29.39	+ 1.19	70. 37. 51.49	50.60	— 0.89
	31. 14. 31. 10.7	9. 12. 44.58	45.26	+ 0.68	74. 40. 10.93	10.00	— 0.93

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

Jan.	22. 0. 51. 44.4	.....	...	...	109. 8. 18.32	17.20	— 1.12
	26. 1. 3. 20.0	21. 26. 9.29	9.50	+ 0.21	106. 47. 20.70	18.80	— 1.90
Apr.	29. 23. 42. 40.7	2. 15. 52.77	53.03	+ 0.26	77. 4. 51.40	46.30	— 5.10
May	15. 0. 51. 2.7	4. 23. 34.25	34.51	+ 0.26	.....	...	...
	25. 1. 27. 20.9	5. 39. 24.01	24.34	+ 0.33	64. 22. 30.44	28.00	— 2.44
June	9. 1. 37. 19.1	6. 48. 32.21	32.52	+ 0.31	.....	...	...
	14. 1. 25. 44.9	6. 56. 38.81	38.59	— 0.22	67. 52. 20.71	27.00	+ 6.29
July	13. 22. 50. 3.8	6. 18. 48.87	48.80	— 0.07	.....	...	...
	15. 22. 45. 16.5	6. 21. 53.88	53.83	— 0.05	.....	...	...
Sep.	5. 1. 0. 32.6	11. 58. 36.51	36.73	+ 0.22	89. 33. 7.47	8.30	+ 0.83
	6. 1. 2. 14.1	12. 4. 14.80	15.02	+ 0.22	90. 17. 47.39	51.50	+ 4.11
	17. 1. 16. 24.9	13. 1. 50.02	49.85	— 0.17	97. 58. 49.65	53.10	+ 3.45

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY—*concluded.*

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849.	d h m s	h m s	s	s	° ' "	"	"
Nov.	4. 22. 37. 20.8	13. 35. 30.85	30.70	— 0.15	94. 42. 63.11	56.60	— 6.51
	5. 22. 35. 36.6	13. 37. 42.95	42.51	— 0.44	....	...	...
	15. 22. 38. 3.0	14. 19. 35.30	35.17	— 0.13	101. 49. 18.99	19.40	+ 0.41
	16. 22. 39. 29.3	14. 24. 58.34	58.39	+ 0.05	102. 21. 39.33	38.50	— 0.83

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS.

Jan.	2. 2. 50. 39.3	21. 39. 8.86	9.01	+ 0.15	105. 54. 49.80	49.10	— 0.70
	6. 2. 53. 25.9	21. 57. 42.16	42.28	+ 0.12	104. 11. 58.24	52.10	— 6.14
	22. 3. 0. 46.2	23. 8. 8.54	8.72	+ 0.18	96. 32. 45.53	39.90	— 5.63
	26. 3. 1. 47.4	23. 24. 56.19	56.41	+ 0.22	94. 30. 12.49	7.40	— 5.09
	31. 3. 2. 41.0	23. 45. 32.64	32.83	+ 0.19	91. 54. 63.82	57.80	— 6.02
Feb.	14. 3. 3. 12.4	0. 41. 15.94	16.32	+ 0.38	84. 41. 14.16	8.50	— 5.66
	15. 3. 3. 9.0	0. 45. 9.10	9.26	+ 0.16	84. 10. 50.31	45.80	— 4.51
	17. 3. 2. 59.5	0. 52. 52.70	52.99	+ 0.29	83. 10. 31.49	26.00	— 5.49
	23. 3. 2. 12.3	1. 15. 46.21	46.71	+ 0.50	80. 13. 45.55	39.80	— 5.75
	26. 3. 1. 40.9	1. 27. 2.85	3.15	+ 0.30	....	...	...
Mar.	1. 3. 1. 0.1	1. 38. 11.54	11.78	+ 0.24	77. 25. 5.35	0.90	— 4.45
	6. 2. 59. 31.5	1. 56. 25.44	25.89	+ 0.45	75. 12. 24.49	19.70	— 4.79
	9. 2. 58. 24.0	2. 7. 7.46	7.97	+ 0.51	73. 56. 45.67	43.20	— 2.47
	17. 2. 54. 16.2	2. 34. 31.36	31.80	+ 0.44	70. 51. 60.55	58.60	— 1.95
Apr.	27. 1. 21. 16.5	3. 42. 55.09	57.20	+ 2.11	64. 27. 43.55	36.50	— 7.05
	30. 1. 5. 46.5	3. 39. 12.17	14.54	+ 2.37	64. 54. 60.43	55.90	— 4.53
May	3. 0. 48. 58.9	3. 34. 11.50	13.88	+ 2.38	65. 32. 56.45	49.10	— 7.35
	4. 0. 43. 8.1	3. 32. 16.27	18.66	+ 2.39	65. 47. 53.52	46.20	— 7.32
	5. 0. 37. 11.1	3. 30. 14.88	17.04	+ 2.16	66. 3. 57.70	50.50	— 7.20
	23. 22. 43. 28.9	2. 51. 8.57	10.66	+ 2.09	72. 52. 16.68	5.10	— 11.58
	24. 22. 38. 22.8	2. 49. 58.16	60.34	+ 2.18	73. 11. 30.42	23.20	— 7.22
	31. 22. 6. 50.6	2. 45. 56.67	58.58	+ 1.91	....	...	...
June	4. 21. 52. 7.9	2. 46. 54.53	55.89	+ 1.36	75. 37. 27.95	17.80	— 10.15
	6. 21. 45. 31.6	2. 48. 13.46	14.75	+ 1.29	78. 50. 3.35	1.50	— 1.85
	8. 21. 39. 30.0	2. 50. 4.06	5.03	+ 0.97	75. 58. 49.55	44.70	— 4.85
	12. 21. 28. 53.4	2. 55. 11.86	13.07	+ 1.21	76. 5. 8.71	6.00	— 2.71
	13. 21. 26. 31.4	2. 56. 46.10	47.00	+ 0.90	76. 4. 38.68	34.30	— 4.38
	17. 21. 18. 3.6	3. 4. 3.13	3.94	+ 0.81	75. 55. 5.20	3.20	— 2.00
	19. 21. 14. 23.4	3. 8. 15.45	16.28	+ 0.83	75. 46. 26.76	21.40	— 5.36
July	6. 20. 55. 6.8	3. 55. 57.14	57.46	+ 0.32	73. 26. 56.81	54.00	— 2.81
	9. 20. 53. 30.7	4. 6. 10.42	10.67	+ 0.25	72. 56. 20.85	19.00	— 1.85
	10. 20. 53. 4.5	4. 9. 40.73	41.10	+ 0.37	72. 46. 4.98	4.40	— 0.58
	11. 20. 52. 41.4	4. 13. 14.12	14.41	+ 0.29	72. 35. 47.02	50.20	+ 3.18
	12. 20. 52. 20.9	4. 16. 50.05	50.52	+ 0.47	72. 25. 42.17	38.10	— 4.07
	13. 20. 52. 3.2	4. 20. 28.89	29.38	+ 0.49	....	...	...
	16. 20. 51. 25.9	4. 31. 41.21	41.70	+ 0.49	71. 45. 30.22	33.40	+ 3.18
	17. 20. 51. 18.6	4. 35. 30.39	30.86	+ 0.47	71. 35. 49.87	49.00	— 0.87
	24. 20. 51. 31.0	5. 3. 18.76	19.38	+ 0.62	70. 32. 50.76	49.50	— 1.26
	25. 20. 51. 41.4	5. 7. 25.65	26.30	+ 0.65	....	...	...
	27. 20. 52. 8.2	5. 15. 45.70	46.05	+ 0.35	70. 9. 27.04	30.60	+ 3.56
	29. 20. 52. 42.2	5. 24. 12.86	13.37	+ 0.51	69. 55. 26.81	29.70	+ 2.89
	30. 20. 53. 2.1	5. 28. 29.42	29.78	+ 0.36	69. 48. 58.62	59.10	+ 0.48
	31. 20. 53. 23.7	5. 32. 47.58	47.96	+ 0.38	69. 42. 50.03	49.70	— 0.33

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849. d h m s	h m s	s	s	° ' "	"	"
Aug. 1. 20. 53. 46.8	5. 37. 7.34	7.84	+ 0.50	69. 37. 0.17	2.10	+ 1.93
6. 20. 56. 7.2	5. 59. 10.92	11.39	+ 0.47	69. 13. 55.88	55.30	— 0.58
7. 20. 56. 39.8	6. 3. 40.12	40.58	+ 0.46	69. 10. 33.05	32.90	— 0.15
10. 20. 58. 25.4	6. 17. 15.74	16.16	+ 0.42	69. 3. 5.24	6.80	+ 1.56
14. 21. 1. 2.9	6. 35. 39.81	40.13	+ 0.32	68. 59. 52.05	46.80	— 5.25
Sep. 2. 21. 16. 1.8	8. 5. 35.68	35.97	+ 0.29	70. 37. 1.87	2.00	+ 0.13
5. 21. 18. 32.5	8. 19. 56.51	56.74	+ 0.23	71. 10. 2.75	5.10	+ 2.35
10. 21. 22. 41.6	8. 43. 48.99	49.30	+ 0.31	72. 15. 41.69	40.60	— 1.09
16. 21. 27. 32.1	9. 12. 19.62	19.75	+ 0.13	73. 50. 58.70	59.90	+ 1.20
23. 21. 32. 52.9	9. 45. (17.13)	16.77	(— 0.36)	76. 3. 18.93	20.70	+ 1.77
24. 21. 33. 36.2	9. 49. 57.17	57.31	+ 0.14	76. 23. 55.64	57.90	+ 2.26
26. 21. 35. 2.6	9. 59. 16.85	16.96	+ 0.11	77. 6. 23.48	24.30	+ 0.82
27. 21. 35. 45.1	.....	...	...	77. 28. 11.49	12.40	+ 0.91
Oct. 4. 21. 40. 29.5	10. 36. 17.10	17.03	— 0.07	80. 10. 49.21	48.20	— 1.01
5. 21. 41. 8.0	10. 40. 52.27	52.62	+ 0.35	80. 35. 22.36	20.50	— 1.86
8. 21. 43. 3.0	10. 54. 37.25	37.17	— 0.08	81. 50. 40.94	41.40	+ 0.46
9. 21. 43. 40.4	10. 59. 11.31	11.32	+ 0.01	82. 16. 21.02	20.90	— 0.12
16. 21. 47. 55.3	11. 31. 2.72	2.72	0.00	85. 22. 24.93	24.90	— 0.03
17. 21. 48. 31.2	11. 35. 35.31	34.93	— 0.38	85. 49. 46.38	46.90	+ 0.52
18. 21. 49. 6.3	11. 40. 7.08	7.00	— 0.08	86. 17. 19.59	18.60	— 0.99
28. 21. 54. 59.5	12. 25. 26.74	26.69	— 0.05	90. 58. 51.68	52.00	+ 0.32
29. 21. 55. 35.7	12. 29. 59.58	59.29	— 0.29	91. 27. 25.68	23.60	— 2.08
Nov. 1. 21. 57. 25.2	12. 43. 39.10	38.83	— 0.27	92. 53. 1.97	2.00	+ 0.03
4. 21. 59. 18.2	12. 57. 22.01	21.71	— 0.30	94. 18. 32.76	31.20	— 1.56
5. 21. 59. 56.7	13. 1. 57.21	56.90	— 0.31	94. 46. 56.40	55.50	— 0.90
16. 22. 7. 41.7	13. 53. 5.53	5.12	— 0.41	99. 52. 7.22	6.40	— 0.82
21. 22. 11. 44.7	14. 16. 51.97	51.55	— 0.42	.....	...	...
26. 22. 16. 12.5	14. 41. 3.29	2.74	— 0.55	104. 7. 48.03	48.60	+ 0.57
30. 22. 20. 6.3	15. 0. 43.94	43.47	— 0.47	105. 41. 13.48	11.60	— 1.88
Dec. 3. 22. 23. 14.0	15. 15. 41.85	41.32	— 0.53	106. 47. 9.22	6.20	— 3.02
5. 22. 25. 25.1	15. 25. 46.40	45.90	— 0.50	107. 28. 53.10	52.90	— 0.20
16. 22. 38. 50.9	16. 22. 36.52	36.09	— 0.43	110. 42. 54.89	54.10	— 0.79
19. 22. 42. 53.9	16. 38. 29.90	29.39	— 0.51	111. 23. 60.75	58.10	— 2.65
26. 22. 52. 52.4	17. 16. 5.97	5.42	— 0.55	112. 37. 29.30	29.50	+ 0.20
27. 22. 54. 21.1	17. 21. 31.44	30.73	— 0.71	112. 45. 19.68	19.50	— 0.18

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

Sep. 21. 17. 27. 31.4	5. 31. 22.22	21.04	— 1.18	67. 6. 25.85	20.20	— 5.65
Oct. 8. 16. 50. 38.0	6. 1. 24.19	22.60	— 1.59	66. 28. 7.43	1.00	— 6.43
18. 16. 24. 25.6	6. 14. 32.92	31.56	— 1.36	66. 10. 22.19	10.20	— 11.99
21. 16. 15. 45.3	6. 17. 40.93	39.34	— 1.59	66. 4. 56.75	41.60	— 15.15
22. 16. 12. 46.2	6. 18. 37.85	36.46	— 1.39	66. 2. 60.11	49.10	— 11.01
23. 16. 9. 44.4	6. 19. 32.11	30.76	— 1.35	66. 0. 65.17	54.70	— 10.47
29. 15. 50. 32.1	6. 23. 55.95	54.56	— 1.39	65. 48. 50.69	37.10	— 13.59
Nov. 1. 15. 40. 13.9	6. 25. 25.76	24.24	— 1.52	65. 41. 60.98	47.00	— 13.98
6. 15. 21. 55.9	6. 26. 47.50	45.90	— 1.60	65. 29. 27.63	9.60	— 18.03
16. 14. 40. 44.1	6. 24. 54.52	52.91	— 1.61	64. 59. 30.37	11.40	— 18.97
30. 13. 32. 34.7	6. 11. 45.71	43.74	— 1.97	64. 12. 20.64	0.70	— 19.94

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849. d h m s	h m s	s	s	° ' "	"	"
Dec. 4. 13. 11. 8·8	6. 6. 2·49	0·55	— 1·94	63. 59. 60·02	41·10	—18·92
8. 12. 49. 4·6	5. 59. 40·97	38·94	— 2·03	63. 48. 71·62	53·30	—18·32
15. 12. 9. 32·0	5. 47. 37·74	35·59	— 2·15	63. 35. 26·57	6·80	—19·77
17. 11. 58. 9·7	5. 44. 6·64	4·67	— 1·97	63. 32. 51·78	32·90	—18·88
19. 11. 46. 49·1	5. 40. 37·36	35·34	— 2·02	63. 30. 55·34	36·80	—18·54
27. 11. 2. 17·1	5. 27. 30·51	28·78	— 1·73	63. 28. 55·20	40·10	—15·10
28. 10. 56. 52·2	5. 25. 61·22	59·32	— 1·90	63. 28. 76·10	59·50	—16·60
29. 10. 51. 29·7	5. 24. 34·38	32·37	— 2·01	63. 29. 41·05	25·00	—16·05

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FLORA.

Apr. 23. 12. 7. 50·2	14. 15. 28·71	30·01	+ 1·30	93. 33. 42·64	52·10	+ 9·46
26. 11. 53. 0·3	14. 12. 26·09	27·51	+ 1·42	93. 19. 26·78	37·54	+10·76

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.

Nov. 30. 15. 17. 41·7	7. 57. 10·03	11·61	+ 1·58	69. 48. 0·16	20·20	+20·04
Dec. 8. 14. 43. 41·0	7. 54. 36·13	37·83	+ 1·70	69. 21. 11·16	28·60	+17·44

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRIS.

Jan. 26. 13. 50. 9·5	10. 15. 4·79	4·32	— 0·47	87. 41. 57·98	67·80	+ 9·82
Feb. 8. 12. 46. 55·7	10. 2. 55·84	55·60	— 0·24	87. 3. 5·51	14·40	+ 8·89
16. 12. 7. 19·2	9. 54. 45·18	45·04	— 0·14	.....	...	...
19. 11. 51. 29·4	9. 51. 42·48	42·60	+ 0·12	86. 12. 9·73	21·00	+11·27
27. 11. 13. 22·3	9. 44. 1·55	1·60	+ 0·05	85. 30. 5·37	14·40	+ 9·03
Mar. 17. 9. 49. 54·6	9. 31. 18·10	17·48	— 0·62	83. 59. 36·14	40·20	+ 4·06
24. 9. 19. 43·8	9. 28. 38·20	37·04	— 1·16	83. 30. 58·71	61·80	+ 3·09
29. 8. 59. 1·6	9. 27. 35·33	34·28	— 1·05	83. 13. 49·88	54·00	+ 4·12

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of METIS.

Aug. 16. 12. 44. 41·7	22. 25. 50·23	49·58	— 0·65	109. 56. 47·75	32·61	—15·14
Sep. 11. 10. 38. 13·0	22. 1. 31·08	30·47	— 0·61	112. 0. 27·06	13·74	—13·32
17. 10. 10. 7·6	21. 56. 60·45	59·38	— 1·07	112. 11. 16·42	7·44	— 8·98

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HEBE.

Jan. 15. 10. 0. 11·6	5. 41. 6·97	8·78	+ 1·81	82. 39. 45·97	43·68	— 2·29
22. 9. 29. 15·2	5. 37. 41·38	43·49	+ 2·11	81. 27. 61·25	55·96	— 5·29
26. 9. 12. 16·7	5. 36. 26·36	28·17	+ 1·81	80. 46. 38·45	27·15	—11·30
Feb. 15. 7. 55. 2·7	5. 37. 50·77	52·61	+ 1·84	77. 26. 22·45	12·34	—10·11
17. 7. 47. 20·7	.....	...	...	77. 7. 41·26	30·34	—10·92

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of ASTRÆA.

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
	1849. d h m s	h m s	s	s	° ' "	"	"
Nov.	6. 12. 15. 55.0	....	...	...	80. 44. 25.09	2.64	-22.45
	16. 11. 27. 6.6	3. 10. 45.26	52.92	+ 7.66	81. 25. 51.01	26.45	-24.56

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO.

Jan.	2. 10. 25. 52.9	....	...	...	90. 9. 27.03	32.80	+ 5.77
	15. 9. 29. 37.4	5. 10. 27.74	40.60	+12.86	88. 25. 0.33	10.80	+10.47
	26. 8. 46. 23.1	5. 10. (28.48)	36.46	(+ 7.98)	86. 38. 0.10	13.60	+13.50
Feb.	15. 7. 37. 7.8	5. 19. 52.93	62.95	+10.02	83. 12. 54.89	67.20	+12.31
	17. 7. 30. 49.3	5. 21. 26.42	36.00	+ 9.58	82. 53. 0.89	11.10	+10.21

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

June	13. 12. 22. 22.2	17. 51. 7.48	7.56	+ 0.08	65. 21. 16.30	25.50	+ 9.20
	22. 11. 39. 23.0	17. 43. 30.17	30.17	0.00	65. 28. 6.83	15.80	+ 8.97
	25. 11. 25. 6.6	17. 41. 1.14	1.04	- 0.10	65. 35. (61.26)	56.30	(- 4.96)
	26. 11. 20. 21.8	17. 40. 12.19	12.09	- 0.10	65. 38. 58.24	64.80	+ 6.56
	27. 11. 15. 37.5	17. 39. 23.57	23.59	+ 0.02	65. 42. 22.83	30.50	+ 7.67
July	7. 10. 28. 48.1	17. 31. 52.08	52.11	+ 0.03	66. 31. 32.04	43.40	+11.36
	10. 10. 15. 0.4	17. 29. 51.76	51.54	- 0.22	66. 51. 15.76	24.40	+ 8.64
	11. 10. 10. 26.2	17. 29. 13.06	13.15	+ 0.09	66. 58. 19.52	25.60	+ 6.08
	12. 10. 5. 52.8	17. 28. 35.76	35.71	- 0.05	67. 5. 32.13	40.30	+ 8.17
	13. 10. 1. 20.4	17. 27. 59.19	59.25	+ 0.06	67. 13. 0.24	8.00	+ 7.76
	16. 9. 47. 49.6	17. 26. 15.82	15.93	+ 0.11	67. 36. 32.69	46.20	+13.51
	18. 9. 38. 54.2	17. 25. 12.11	12.36	+ 0.25	67. 53. 23.23	31.00	+ 7.77
	25. 9. 8. 16.9	17. 22. 5.52	5.62	+ 0.10	68. 57. 30.54	37.10	+ 6.56
	30. 8. 46. 59.9	17. 20. 27.95	28.10	+ 0.15	....	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES.

July	13. 10. 48. 0.0	18. 14. 46.51	58.10	+11.59	118. 36. 58.25	62.50	+ 4.25
	18. 10. 24. 14.8	18. 10. 40.19	51.67	+11.48	118. 49. 4.89	16.00	+11.11
	19. 10. 19. 32.7	18. 9. 53.84	65.60	+11.76	118. 51. 17.27	28.80	+11.53
	24. 9. 56. 22.2	....	...	...	119. 1. 15.69	26.80	+11.11
	26. 9. 47. 15.4	18. 5. 7.08	18.46	+11.38	119. 4. 48.56	57.00	+ 8.44

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

Jan.	1. 14. 50. 25.3	9. 36. 56.57	56.25	- 0.32	74. 48. 54.83	53.80	- 1.03
	2. 14. 46. 11.3	9. 36. 38.42	38.01	- 0.41	74. 47. 11.75	9.40	- 2.35
	5. 14. 33. 25.2	9. 35. 39.89	39.42	- 0.47	74. 41. 42.27	38.90	- 3.37
	26. 13. 1. 49.4	9. 26. 36.76	36.11	- 0.65	73. 53. 50.47	48.10	- 2.37
	31. 12. 39. 37.4	9. 24. 3.87	3.38	- 0.49	73. 41. 8.14	4.80	- 3.34
Feb.	8. 12. 4. 0.5	9. 19. 53.54	53.04	- 0.50	73. 20. 49.05	46.30	- 2.75
	12. 11. 46. 12.5	9. 17. 48.85	48.18	- 0.67	73. 10. 56.59	53.20	- 3.39
	15. 11. 32. 52.6	9. 16. 16.44	15.84	- 0.60	73. 3. 44.36	40.90	- 3.46

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849. d h m s	h m s	s	s	° ' "	"	"
Feb. 16. 11. 28. 26.5	9. 15. 46.10	45.42	— 0.68	73. 1. 21.92	19.70	— 2.22
17. 11. 24. 0.3	9. 15. 15.74	15.22	— 0.52	72. 59. 4.94	0.10	— 4.84
19. 11. 15. 9.2	9. 14. 16.29	15.58	— 0.71	72. 54. 27.93	26.00	— 1.93
26. 10. 44. 19.8	9. 10. 57.76	57.08	— 0.68	72. 39. 34.67	30.60	— 4.07
27. 10. 39. 57.1	9. 10. 30.84	30.30	— 0.54	72. 37. 34.74	31.80	— 2.94
Mar. 2. 10. 26. 52.2	9. 9. 13.48	12.76	— 0.72	72. 31. 52.30	50.50	— 1.80
5. 10. 13. 51.7	9. 7. 60.47	59.75	— 0.72	72. 26. 37.29	33.00	— 4.29
6. 10. 9. 32.4	9. 7. 37.05	36.49	— 0.56	72. 24. 56.74	52.70	— 4.04
10. 9. 52. 21.8	9. 6. 9.85	9.18	— 0.67	72. 18. 44.32	40.30	— 4.02
17. 9. 22. 41.8	9. 4. 0.78	0.29	— 0.49	72. 9. 48.62	45.50	— 3.12
20. 9. 10. 9.2	9. 3. 15.77	15.12	— 0.65	72. 6. 46.61	43.50	— 3.11
21. 9. 5. 59.8	9. 3. 2.23	1.48	— 0.75	72. 5. 52.52	49.30	— 3.22
24. 8. 53. 35.4	9. 2. 25.46	24.88	— 0.58	72. 3. 26.43	26.20	— 0.23
29. 8. 33. 9.7	9. 1. 39.16	38.68	— 0.48	72. 0. 37.38	33.70	— 3.68
31. 8. 25. 4.9	9. 1. 26.17	25.47	— 0.70	71. 59. 50.99	47.80	— 3.19
Apr. 7. 7. 57. 11.3	9. 1. 3.88	3.09	— 0.79	71. 58. 53.44	50.50	— 2.94
14. 7. 29. 54.3	9. 1. 18.20	17.55	— 0.65	72. 0. 32.28	31.50	— 0.78
Nov. 26. 19. 2. 27.6	11. 26. 46.65	45.81	— 0.84	85. 11. 57.79	53.30	— 4.49
30. 18. 48. 25.9	11. 28. 28.79	28.13	— 0.66	85. 21. 51.43	47.10	— 4.33
Dec. 5. 18. 30. 41.9	11. 30. 24.69	23.95	— 0.74	85. 32. 51.74	50.00	— 1.74
20. 17. 36. 1.3	11. 34. 43.42	42.67	— 0.75	85. 56. 20.66	18.00	— 2.66
23. 17. 24. 48.0	11. 35. 17.94	17.26	— 0.68	85. 59. 12.64	7.00	— 5.64
28. 17. 5. 52.7	11. 36. 2.34	1.50	— 0.84	86. 2. 25.65	21.50	— 4.15

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN.

Aug. 8. 15. 22. 4.1	0. 32. 6.08	4.51	— 1.57	89. 17. 4.03	5.80	+ 1.77
15. 14. 53. 41.0	0. 31. 9.13	7.63	— 1.50	89. 24. 59.48	61.90	+ 2.42
Sep. 4. 13. 30. 55.5	0. 27. 6.08	4.55	— 1.53	89. 55. 21.60	22.70	+ 1.10
5. 13. 26. 45.1	0. 26. 51.54	49.82	— 1.72	89. 57. 5.04	7.50	+ 2.46
17. 12. 36. 24.7	0. 23. 41.52	39.87	— 1.65	90. 19. 1.37	5.70	+ 4.33
24. 12. 6. 55.3	0. 21. 43.12	41.56	— 1.56	90. 32. 16.19	20.40	+ 4.21
25. 12. 2. 42.4	0. 21. 26.10	24.45	— 1.65	90. 34. 10.16	13.90	+ 3.74
Oct. 8. 11. 7. 54.8	0. 17. 44.65	43.14	— 1.51	90. 58. 5.35	8.60	+ 3.25
9. 11. 3. 42.4	0. 17. 28.14	26.51	— 1.63	90. 59. 49.80	53.90	+ 4.10
15. 10. 38. 29.9	0. 15. 50.89	49.16	— 1.73	91. 9. 58.58	62.10	+ 3.52
18. 10. 25. 55.5	0. 15. 3.98	2.47	— 1.51	91. 14. 45.27	48.60	+ 3.33
29. 9. 40. 5.6	0. 12. 28.71	27.04	— 1.67	91. 30. 10.54	12.70	+ 2.16
Nov. 1. 9. 27. 40.7	0. 11. 51.44	49.82	— 1.62	91. 33. 42.84	44.90	+ 2.06
2. 9. 23. 32.9	0. 11. 39.49	37.97	— 1.52	91. 34. 50.61	51.50	+ 0.89
5. 9. 11. 11.5	0. 11. 5.71	4.17	— 1.54	91. 37. 57.64	58.20	+ 0.56
6. 9. 7. 5.1	0. 10. 55.16	53.51	— 1.65	91. 38. 53.05	56.10	+ 3.05
10. 8. 50. 42.0	0. 10. 15.58	14.03	— 1.55	91. 42. 23.46	24.60	+ 1.14
14. 8. 34. 24.3	0. 9. 41.40	39.89	— 1.51	91. 45. 13.71	15.00	+ 1.29
16. 8. 26. 17.6	0. 9. 26.48	24.93	— 1.55	91. 46. 23.63	25.40	+ 1.77
17. 8. 22. 14.6	0. 9. 19.40	17.98	— 1.42	91. 46. 55.27	56.90	+ 1.63
26. 7. 46. 6.0	0. 8. 33.84	32.28	— 1.56	91. 49. 42.13	44.30	+ 2.17
27. 7. 42. 6.8	0. 8. 30.59	29.11	— 1.48	91. 49. 48.06	49.90	+ 1.84
29. 7. 34. 9.8	0. 8. 25.41	23.94	— 1.47	91. 49. 53.45	53.30	— 0.15

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of SATURN—*concluded.*

	Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849.	d h m s	h m s	s	s	° ' "	"	"
Dec.	1. 7. 26. 14.2	0. 8. 21. 64	20.32	— 1.32	91. 49. 46.14	46.10	— 0.04
	6. 7. 6. 32.5	0. 8. 19. 41	18.14	— 1.27	91. 48. 40.24	42.40	+ 2.16
	8. 6. 58. 42.7	0. 8. 21. 49	20.04	— 1.45	91. 47. 58.81	58.50	— 0.31
	17. 6. 23. 47.6	0. 8. 49. 66	48.29	— 1.37	91. 42. 31.85	32.50	+ 0.65
	20. 6. 12. 16.4	0. 9. 6. 26	4.83	— 1.43	91. 39. 57.40	57.80	+ 0.40
	27. 5. 45. 36.9	0. 9. 58. 25	56.91	— 1.34	91. 32. 29.69	30.40	+ 0.71
	29. 5. 38. 3.3	0. 10. 16. 52	15.18	— 1.34	91. 30. 0.42	1.10	+ 0.68

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of URANUS.

Jan.	6. 6. 3. 51.2	1. 8. 38. 75	48.12	+ 9.37	83. 21. 55.40	4.20	— 51.20
Sep.	5. 14. 36. 11.0	1. 36. 28. 90	39.22	+ 10.32	80. 35. 60.10	5.70	— 54.40
	17. 13. 47. 38.7	1. 35. 7. 26	17.44	+ 10.18	80. 43. 59.21	8.00	— 51.21
	25. 13. 15. 8.0	1. 34. 3. 65	13.96	+ 10.31	80. 49. 74.41	20.00	— 54.41
Oct.	8. 12. 22. 8.3	1. 32. 10. 36	20.54	+ 10.18	81. 0. 77.63	21.90	— 55.73
	18. 11. 41. 17.6	1. 30. 38. 54	48.83	+ 10.29	81. 9. 68.06	14.80	— 53.26
	29. 10. 56. 22.7	1. 28. 58. 32	68.64	+ 10.32	81. 18. 107.59	54.80	— 52.79
Nov.	2. 10. 40. 4.0	1. 28. 23. 18	33.39	+ 10.21	81. 22. 73.51	18.30	— 55.21
	6. 10. 23. 46.2	1. 27. 48. 86	59.13	+ 10.27	81. 25. 89.03	35.60	— 53.43
	10. 10. 7. 29.6	1. 27. 15. 87	26.10	+ 10.23	81. 28. 98.44	45.20	— 53.24
	14. 9. 51. 14.6	1. 26. 44. 40	54.54	+ 10.14	81. 31. 100.57	45.90	— 54.67
	16. 9. 43. 7.8	1. 26. 29. 32	39.38	+ 10.06	81. 33. 66.02	12.50	— 53.52
	17. 9. 39. 4.4	1. 26. 21. 80	31.97	+ 10.17	81. 33. 109.88	54.80	— 55.08
	27. 8. 58. 38.4	.....	...	...	81. 40. 68.53	15.50	— 53.03
Dec.	1. 8. 42. 31.7	1. 24. 51. 69	61.83	+ 10.14	81. 42. 78.47	24.10	— 54.37
	6. 8. 22. 26.8	1. 24. 26. 41	36.62	+ 10.21	81. 44. 97.77	43.80	— 53.97
	8. 8. 14. 26.5	1. 24. 17. 68	27.67	+ 9.99	81. 45. 87.55	32.80	— 54.75
	17. 7. 38. 31.9	1. 23. 46. 23	56.03	+ 9.80	81. 48. 74.08	21.40	— 52.68
	19. 7. 30. 35.1	1. 23. 41. 23	51.00	+ 9.77	81. 48. 98.77	46.90	— 51.87
	20. 7. 26. 36.9	1. 23. 38. 97	48.76	+ 9.79	81. 48. 111.99	58.00	— 53.99
	27. 6. 58. 55.0	.....	...	...	81. 49. 95.47	43.60	— 51.87
	29. 6. 51. 1.9	.....	...	...	81. 49. 97.67	46.30	— 51.37

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE.

Aug.	13. 12. 54. 25.1	22. 23. 45. 52	45.60	+ 0.08	100. 48. 46.04	46.00	— 0.04
	16. 12. 42. 19.3	22. 23. 27. 43	27.46	+ 0.03	....	...	...
	31. 11. 41. 48.1	22. 21. 54. 58	54.61	+ 0.03	100. 59. 36.24	36.66	+ 0.42
Sep.	5. 11. 21. 37.8	22. 21. 23. 70	23.82	+ 0.12	101. 2. 35.47	34.97	— 0.50
	11. 10. 57. 26.4	22. 20. 47. 68	47.64	— 0.04	101. 6. 3.14	3.26	+ 0.12
	17. 10. 33. 16.1	22. 20. 12. 76	12.80	+ 0.04	101. 9. 18.86	22.79	+ 3.93
	20. 10. 21. 11.8	22. 19. 56. 09	56.02	— 0.07	101. 10. 58.36	58.32	— 0.04
	25. 10. 1. 5.6	22. 19. 29. 33	29.24	— 0.09	101. 13. 29.82	30.14	+ 0.32
Oct.	8. 9. 8. 57.8	22. 18. 28. 17	28.18	+ 0.01	101. 19. 10.08	12.63	+ 2.55
	9. 9. 4. 58.0	22. 18. 24. 25	24.06	— 0.19	101. 19. 32.20	35.39	+ 3.19
	15. 8. 41. 0.9	.....	...	...	101. 21. 38.90	39.89	+ 0.99
	18. 8. 29. 2.4	22. 17. 51. 71	51.57	— 0.14	101. 22. 31.30	34.06	+ 2.76
	19. 8. 25. 3.4	22. 17. 48. 62	48.49	— 0.13	101. 22. 52.02	50.85	— 1.17

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1849. d h m s	h m s	s	s	° ' "	"	"
Oct. 29. 7. 45. 19.8	22. 17. 24.01	23.90	— 0.11	101. 25. 0.18	2.41	+ 2.23
31. 7. 37. 24.4	22. 17. 20.42	20.40	— 0.02	101. 25. 17.34	20.56	+ 3.22
Nov. 2. 7. 29. 29.5	22. 17. 17.34	17.37	+ 0.03	101. 25. 34.64	35.92	+ 1.28
14. 6. 42. 11.3	22. 17. 9.98	9.90	— 0.08	101. 26. 7.27	7.36	+ 0.09
26. 5. 55. 11.2	22. 17. 21.03	21.11	+ 0.08	101. 24. 50.07	52.47	+ 2.40
27. 5. 51. 17.2	22. 17. 22.81	22.88	+ 0.07	101. 24. 38.49	41.43	+ 2.94
Dec. 6. 5. 16. 15.7	22. 17. 44.50	44.72	+ 0.22	101. 22. 26.07	29.62	+ 3.55
8. 5. 8. 30.3	22. 17. 50.94	50.95	+ 0.01	101. 21. 51.68	52.50	+ 0.82

RIGHT ASCENSION and NORTH POLAR DISTANCE of SCHWEIZER'S COMET.

Apr. 28. 8. 50. 10.5	11. 16. 59.32*			86. 27. 55.04			
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INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.	Mean Day, 1849.	Error in R. A.	Number of Obs.	Error in N.P.D.	Number of Obs.	Error in Ecliptic N.P.D.
Jan. 2 to Feb. 1	Jan. 19	— 0.11	9	+ 0.62	9	+ 0.284
Feb. 8 to Feb. 27	Feb. 17	— 0.08	10	— 0.16	10	— 0.558
Mar. 2 to Mar. 17	March 8	— 0.11	7	— 0.56	7	— 1.158
Mar. 31 to Apr. 30	April 15	— 0.07	8	+ 0.14	7	— 0.247
May 4 to June 1	May 20	— 0.09	9	— 0.27	9	— 0.539
June 5 to June 29	June 18	— 0.13	14	+ 0.93	16	+ 0.890
July 2 to July 31	July 14	— 0.02	13	+ 0.77	14	+ 0.805
Aug. 6 to Aug. 28	Aug. 15	+ 0.11	8	+ 1.20	6	+ 0.615
Sep. 5 to Sep. 28	Sep. 15	+ 0.01	11	+ 0.08	11	+ 0.015
Oct. 5 to Oct. 25	Oct. 19	— 0.05	8	— 1.31	9	— 0.956
Oct. 28 to Nov. 16	Nov. 7	— 0.11	11	— 1.15	11	— 0.634
Nov. 26 to Dec. 31	Dec. 12	+ 0.01	12	+ 0.36	12	+ 0.349

* Deduced from the Observation with the Mural Circle.

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,
 $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$,
 and altering the number of observations so as to make the assumed weights of opposite quarters of the year equal :

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} + 0.284 = + 0.4907 x - 0.8714 y + z \\ - 0.558 = + 0.8551 x - 0.5185 y + z \\ - 1.158 = + 0.9775 x - 0.2108 y + z \end{array} \right. & \begin{array}{l} \text{Weight 10} \\ \text{,, 10} \\ \text{,, 8} \end{array} \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 0.247 = + 0.9035 x + 0.4287 y + z \\ - 0.539 = + 0.5105 x + 0.8599 y + z \\ + 0.890 = + 0.0515 x + 0.9987 y + z \end{array} \right. & \begin{array}{l} \text{,, 7} \\ \text{,, 9} \\ \text{,, 16} \end{array} \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} + 0.805 = - 0.3722 x + 0.9282 y + z \\ + 0.615 = - 0.7930 x + 0.6092 y + z \\ + 0.015 = - 0.9914 x + 0.1305 y + z \end{array} \right. & \begin{array}{l} \text{,, 12} \\ \text{,, 6} \\ \text{,, 10} \end{array} \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 0.956 = - 0.8988 x - 0.4384 y + z \\ - 0.634 = - 0.7071 x - 0.7071 y + z \\ + 0.349 = - 0.1665 x - 0.9860 y + z \end{array} \right. & \begin{array}{l} \text{,, 9} \\ \text{,, 11} \\ \text{,, 12} \end{array}
 \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1849.

Equations multiplied by the Weights.

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} + 2.840 = + 4.9070 x - 8.7140 y + 10 z \\ - 5.580 = + 8.5510 x - 5.1850 y + 10 z \\ - 9.264 = + 7.8200 x - 1.6864 y + 8 z \end{array} \right. \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 1.729 = + 6.3245 x + 3.0009 y + 7 z \\ - 4.851 = + 4.5945 x + 7.7391 y + 9 z \\ + 14.240 = + 0.8240 x + 15.9792 y + 16 z \end{array} \right. \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} + 9.660 = - 4.4664 x + 11.1384 y + 12 z \\ + 3.690 = - 4.7580 x + 3.6552 y + 6 z \\ + 0.150 = - 9.9140 x + 1.3050 y + 10 z \end{array} \right. \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 8.604 = - 8.0892 x - 3.9456 y + 9 z \\ - 6.974 = - 7.7781 x - 7.7781 y + 11 z \\ + 4.188 = - 1.9980 x - 11.8320 y + 12 z \end{array} \right.
 \end{array}$$

New Equations formed by adding and subtracting the above, as indicated below :

$$\begin{array}{l}
 \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\
 - 2.234 = - 3.9827 z + 3.6767 y + 120 z \\
 \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\
 - 6.454 = + 70.0247 x + 18.5909 y \\
 \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\
 - 44.554 = + 10.8081 x - 81.9589 y
 \end{array}$$

Solution of these equations :

$$\begin{array}{l}
 x = - 0.229 \\
 y = + 0.514 \\
 z = - 0.042
 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic North Polar Distance is negative, or, the assumed Ecliptic is north of the Sun's true path, by $0''.229$; and therefore that the right ascensions of all stars ought to be diminished by $\frac{0''.229}{15 \times \sin 23^\circ.28'} = 0''.038$.

The second term denotes that the obliquity assumed in the Nautical Almanac ought to be increased by $0''.514$.

The third term denotes that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $0''.084$.

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES of the SUN and PLANETS.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1849.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 2 to Feb. 1	9	9	January 19	— 0·11	+ 0·62	— 1·643	+ 0·284
Feb. 8 to Feb. 27	10	10	February 17	— 0·08	— 0·16	— 1·045	— 0·558
Mar. 2 to Mar. 17	7	7	March 8	— 0·11	— 0·56	— 1·295	— 1·158
Mar. 31 to April 30	8	7	April 15	— 0·07	+ 0·14	— 1·015	— 0·247
May 4 to June 1	9	9	May 20	— 0·09	— 0·27	— 1·179	— 0·539
June 5 to June 29	14	16	June 18	— 0·13	+ 0·93	— 1·810	+ 0·890
July 2 to July 31	13	14	July 14	— 0·02	+ 0·77	— 0·153	+ 0·805
Aug. 6 to Aug. 28	8	6	August 15	+ 0·11	+ 1·20	+ 1·904	+ 0·615
Sep. 5 to Sep. 28	11	11	September 15	+ 0·01	+ 0·08	+ 0·170	+ 0·015
Oct. 5 to Oct. 25	8	9	October 19	— 0·05	— 1·31	— 1·161	— 0·956
Oct. 28 to Nov. 16	11	11	November 7	— 0·11	— 1·15	— 1·852	— 0·634
Nov. 26 to Dec. 31	12	12	December 12	+ 0·01	+ 0·36	+ 0·164	+ 0·349

MERCURY.

Jan. 22 to Jan. 26	1	2	January 25	+ 0·21	— 1·51	+ 3·32	— 0·52
Apr. 29	1	1	April 30	+ 0·26	— 5·10	+ 5·27	— 3·57
May 25 to June 14	3	2	June 5	+ 0·14	+ 1·93	+ 2·02	+ 1·81
Sep. 5 to Sep. 17	3	3	September 9	+ 0·09	+ 2·80	+ 2·35	+ 2·04
Nov. 4 to Nov. 16	4	3	November 12	— 0·17	— 2·31	— 3·16	— 1·30

VENUS.

Jan. 2 to Jan. 31	5	5	January 17	+ 0·17	— 4·72	+ 4·12	— 3·42
Feb. 14 to Feb. 26	5	4	February 18	+ 0·33	— 5·35	+ 6·61	— 3·04
Mar. 1 to Mar. 17	4	4	March 8	+ 0·41	— 3·42	+ 6·75	— 1·19
Apr. 27 to May 5	5	5	May 2	+ 2·28	— 6·69	+ 31·93	+ 0·82
May 23 to June 19	10	9	June 8	+ 1·36	— 5·57	+ 20·58	+ 0·52
July 6 to July 17	8	7	July 13	+ 0·39	— 0·55	+ 5·60	+ 0·42

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES—*continued.*VENUS—*concluded.*

Extent of Group.	Number of Obs. of R. A.	Number of Obs. in N. P. D.	Mean Day, 1849.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
July 24 to Aug. 14	11	10	August 3	+ 0.46	+ 0.29	+ 6.46	+ 0.49
Sep. 2 to Sep. 27	5	8	September 17	+ 0.18	+ 1.04	+ 2.79	+ 0.22
Oct. 4 to Oct. 18	7	7	October 12	— 0.04	— 0.43	— 0.72	— 0.17
Oct. 28 to Nov. 5	5	5	November 2	— 0.24	— 0.84	— 3.64	+ 0.63
Nov. 16 to Dec. 5	6	5	November 28	— 0.48	— 1.07	— 6.98	+ 1.06
Dec. 16 to Dec. 27	4	4	December 23	— 0.55	— 0.86	— 7.70	0.00

MARS.

Sep. 21 to Oct. 23	6	6	October 15	— 1.41	— 10.12	— 19.53	— 9.78
Oct. 29 to Nov. 30	5	5	November 11	— 1.62	— 16.90	— 22.84	— 15.85
Dec. 4 to Dec. 29	8	8	December 19	— 1.97	— 17.77	— 25.87	— 18.62

FLORA.

April 23 to April 26	2	2	April 25	+ 1.36	+ 10.11	+ 22.94	+ 2.66
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VESTA.

Nov. 30 to Dec. 8	2	2	December 5	+ 1.64	+ 18.74	+ 26.23	+ 13.94
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IRIS.

Jan. 26 to Feb. 19	4	3	February 10	— 0.18	+ 9.99	+ 0.96	+ 10.31
Feb. 27 to Mar. 29	4	4	March 17	— 0.70	+ 5.08	— 8.40	+ 8.16

METIS.

Aug. 16	1	1	August 17	— 0.65	— 15.14	— 2.92	— 17.48
Sep. 11 to Sep. 17	2	2	September 14	— 0.84	— 11.15	— 7.17	— 14.51

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES—*continued.*

HEBE.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1849.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 15 to Jan. 26	3	3	January 21	+ 1.91	— 6.29	+ 29.58	— 5.15
Feb. 15 to Feb. 17	1	2	February 16	+ 1.84	— 10.52	+ 27.78	— 9.49

ASTRÆA.

Nov. 16	1	1	November 16	+ 7.66	— 24.56	+107.83	+ 4.48
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JUNO.

Jan. 2 to Jan. 26	1	3	January 15	+ 12.86	+ 9.91	+205.23	+ 27.46
Feb. 15 to Feb. 17	2	2	February 16	+ 9.80	+ 11.26	+150.75	+ 21.57

PALLAS.

June 14 to June 27	5	4	June 23	0.00	+ 8.10	+ 0.54	+ 8.21
July 7 to July 30	9	8	July 15	+ 0.06	+ 8.73	+ 2.25	+ 8.67

CERES.

July 13 to July 26	4	5	July 19	+ 11.55	+ 9.29	+152.30	+ 11.95
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JUPITER.

Jan. 1 to Jan. 31	5	5	January 14	— 0.47	— 2.49	— 7.23	— 0.20
Feb. 8 to Feb. 27	8	8	February 18	— 0.61	— 3.20	— 9.31	— 0.44
Mar. 2 to Mar. 21	7	7	March 12	— 0.65	— 3.37	— 9.87	— 0.55
Mar. 24 to April 14	5	5	April 2	— 0.64	— 2.16	— 9.39	+ 0.52
Nov. 26 to Dec. 28	6	6	December 13	— 0.75	— 3.84	— 11.82	+ 0.91

SATURN.

Aug. 8 to Aug. 15	2	2	August 13	— 1.53	+ 2.10	— 21.98	— 7.12
Sep. 4 to Sep. 25	5	5	September 16	— 1.62	+ 3.17	— 23.63	— 6.71

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES—concluded.

SATURN—concluded.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1849.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Oct. 8 to Nov. 6	9	9	October 24	— 1·60	+ 2·55	— 23·08	— 7·21
Nov. 10 to Dec. 1	8	8	November 21	— 1·48	+ 1·21	— 20·88	— 7·73
Dec. 6 to Dec. 29	6	6	December 18	— 1·37	+ 0·72	— 19·17	— 7·52

URANUS.

Jan. 6	1	1	January 6	+ 9·37	— 51·20	+ 148·58	+ 5·67
Sep. 5 to Sep. 25	3	3	September 16	+ 10·27	— 53·34	+ 161·20	+ 5·70
Oct. 8 to Nov. 10	6	6	October 28	+ 10·24	— 53·94	+ 161·07	+ 5·90
Nov. 14 to Nov. 17	3	3	November 16	+ 10·12	— 54·42	+ 159·49	+ 5·00
Nov. 27 to Dec. 29	6	9	December 13	+ 9·95	— 53·10	+ 156·92	+ 5·65

NEPTUNE.

Aug. 13 to Sep. 11	5	4	August 30	+ 0·04	0·00	+ 0·55	+ 0·21
Sep. 17 to Oct. 19	7	8	October 5	— 0·08	+ 1·57	— 1·67	+ 1·04
Oct. 29 to Nov. 2	3	3	October 31	— 0·03	+ 2·24	— 1·22	+ 1·93
Nov. 14 to Dec. 8	5	5	November 28	+ 0·06	+ 1·96	+ 0·12	+ 2·15

ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.

MERCURY.

Day, 1849.	Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.						Error of Tables in Hel. E. P. D.
January 25	"	+	3.32	=	+	0.243 δL + 85900 $\delta \rho$ + 0.758 δl - 31704 δr	- 1.81
April 30		+	5.27	=	+	0.242 - 32414 + 0.758 + 10620	- 14.42
June 5		+	2.02	=	-	0.179 + 246820 + 1.179 - 104554	+ 3.32
September 9		+	2.35	=	+	0.250 + 116732 + 0.750 - 52997	+ 5.67
November 12		-	3.16	=	+	0.120 - 179710 + 0.880 + 61865	- 4.02

ERRORS of the TABULAR HELIOCENTRIC PLACES—*continued.*

VENUS.

Day, 1849.		Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.				Error of Tables in Hel. E. P. D.
		"	"	"	"	"
January	17	+ 4.12 = + 0.286 δL	+ 184710 $\delta \rho$	+ 0.714 δl	- 135553 δr	- 4.83
February	18	+ 6.61 = + 0.134	+ 256903	+ 0.866	- 186698	- 3.36
March	8	+ 6.75 = - 0.046	+ 312946	+ 1.044	- 226011	- 1.09
May	2	+ 31.93 = - 2.211	+ 254665	+ 3.205	- 181995	+ 0.34
June	8	+ 20.58 = - 1.220	- 413312	+ 2.219	+ 295406	+ 0.27
July	13	+ 5.60 = - 0.117	- 319816	+ 1.115	+ 228539	+ 0.37
August	3	+ 6.46 = + 0.113	- 253414	+ 0.886	+ 181151	+ 0.54
September	17	+ 2.79 = + 0.311	- 158150	+ 0.690	+ 113444	+ 0.35
October	12	- 0.72 = + 0.357	- 122205	+ 0.643	+ 87990	- 0.31
November	2	- 3.64 = + 0.382	- 97322	+ 0.618	+ 70454	+ 1.23
November	28	- 6.98 = + 0.403	- 71314	+ 0.593	+ 52092	+ 2.24
December	23	- 7.70 = + 0.415	- 50030	+ 0.585	+ 36881	0.00

MARS.

October	15	- 19.53 = + 1.412 δL	- 159400 $\delta \rho$	- 0.412 δl	+ 237755 δr	- 5.37
November	11	- 22.84 = + 2.017	- 147570	- 1.017	+ 227155	- 6.97
December	19	- 25.87 = + 2.676	+ 6448	- 1.677	- 10336	- 6.96

VESTA.

December	5	"	"	"	"	"
		+ 26.23 = + 1.411 δL	- 31868 $\delta \rho$			+ 9.55 + 168 $\delta \rho$

JUNO.

January	15	+ 205.23 = + 1.654 δL	+ 52784 $\delta \rho$			+ 3.48 + 17799 $\delta \rho$
February	16	+ 150.75 = + 1.243	+ 58850			+ 1.52 + 10523

ERRORS of the TABULAR HELIOCENTRIC PLACES—*continued.*

PALLAS.

Day, 1849.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
June 23	$+ 0.54 = + 1.602 \delta L + 6680 \delta \rho$	$+ 7.73 - 21850 \delta \rho$
July 15	$+ 2.25 = + 1.464 + 23980$	$+ 8.31 - 18863$

CERES.

July 19	$+ 152.30 = + 1.476 \delta L + 15355 \delta \rho$	$+ 6.64 + 2281 \delta \rho$
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JUPITER.

January 14	$- 7.23 = + 1.199 \delta L - 3772 \delta \rho - 0.199 \delta l + 20467 \delta r$	$- 0.17$
February 18	$- 9.31 = + 1.219 + 2068 - 0.219 - 11234$	$- 0.36$
March 12	$- 9.87 = + 1.172 + 5215 - 0.172 - 28119$	$- 0.47$
April 2	$- 9.39 = + 1.104 + 6950 - 0.104 - 37329$	$+ 0.47$
December 13	$- 11.82 = + 0.998 - 6999 + 0.002 + 38646$	$+ 0.90$

SATURN.

August 13	$- 21.98 = + 1.079 \delta L - 1825 \delta \rho - 0.079 \delta l + 17182 \delta r$	$- 6.58$
September 16	$- 23.63 = + 1.116 - 530 - 0.116 + 5029$	$- 6.01$
October 24	$- 23.08 = + 1.102 + 1195 - 0.102 - 11428$	$- 6.54$
November 21	$- 20.88 = + 1.059 + 2035 - 0.059 - 19614$	$- 7.27$
December 18	$- 19.17 = + 1.009 + 2289 - 0.009 - 22065$	$- 7.41$

URANUS.

January 6	$+ 148.58 = + 1.002 \delta L + 504 \delta \rho - 0.002 \delta l - 10370 \delta r$	$+ 5.65$
September 16	$+ 161.20 = + 1.045 - 287 - 0.045 + 5743$	$+ 5.45$
October 28	$+ 161.07 = + 1.051 + 105 - 0.051 - 2098$	$+ 5.61$
November 16	$+ 159.49 = + 1.044 + 277 - 0.045 - 5558$	$+ 4.79$
December 13	$+ 156.92 = + 1.026 + 446 - 0.026 - 9116$	$+ 5.54$

ERRORS of the TABULAR HELIOCENTRIC PLACES—concluded.

NEPTUNE.

Day, 1849.		Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.							Error of Tables in Hel. E. P. D.	
		"		"		"		"		
August	30	+ 0.55	= + 1.035 δL	+ 6 $\delta \rho$	- 0.035 δl	- 203 δr		+ 0.20		
October	5	- 1.67	= + 1.026	+ 148	- 0.026	- 4507		+ 1.01		
	31	- 1.22	= + 1.014	+ 209	- 0.014	- 6364		+ 1.90		
November	28	+ 0.12	= + 0.998	+ 224	+ 0.002	- 6846		+ 2.15		

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE.

Day, 1849.		Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument		Observer.	Day, 1849.		Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
		In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.				In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Jan. 2		+ 5.82	+ 1.20	D	+ 11.72	+ 0.23	E	Feb. 27		+ 8.04	+ 1.66	D	+ 7.60	- 0.32	R
3					+ 5.72	- 2.20	R	28					+ 11.33	+ 9.15	E
5					+ 10.96	- 1.88	E	Mar. 1		+ 3.68	- 1.05	H	+ 3.17	- 0.59	D
6		+ 7.82	- 2.33	R	+ 7.53	- 4.28	R	2		+ 1.60	- 2.89	E	+ 3.08	- 3.20	R
8		+ 10.25	- 3.14	H	+ 4.55	- 2.58	R	3					+ 9.61	- 2.22	E
9					+ 12.08	- 1.22	D	4		+ 11.44	- 3.74	R	+ 8.78	- 4.31	R
10		+ 12.74	- 2.90	R	+ 13.13	- 13.89	E	5		+ 9.46	- 5.05	E	+ 11.61	- 7.27	D
11					+ 7.38	- 2.65	R	6					+ 9.61	- 8.27	R
14		+ 6.87	- 2.62	R	+ 4.76	- 3.00	D	8		+ 10.76	- 4.07	H	+ 9.75	- 9.52	D
15		+ 9.49	- 3.19	H	+ 9.02	- 5.64	E	9		+ 7.71	- 3.72	R	+ 6.46	- 9.57	E
16					+ 11.91	- 5.56	D	10		+ 9.68	- 6.00	E	+ 6.88	- 7.60	D
17		+ 10.41	+ 0.31	R	+ 11.33	+ 0.20	R	16		+ 7.18	+ 4.90	E	+ 8.59	+ 2.85	R
26					+ 9.92	+ 1.05	D	17					+ 7.11	+ 6.26	D
28		+ 3.45	- 4.91	E	+ 4.35	+ 0.53	D	29					+ 6.85	+ 3.10	R
29					+ 2.63	+ 3.42	R	30					+ 9.09	- 1.82	E
31		+ 1.27	- 1.09	R	+ 6.01	+ 0.09	E	31		+ 3.70	- 7.24	E	+ 5.41	- 3.82	R
Feb. 1					- 1.41	- 3.58	R	April 1		+ 11.13	- 2.44	D	+ 6.40	- 5.73	D
2					+ 6.62	+ 0.38	D	2		+ 11.99	- 4.64	H	+ 8.49	- 5.09	R
4		+ 8.18	- 3.17	E	+ 16.41	- 2.46	E	3					+ 11.30	- 7.68	D
8		+ 12.07	- 7.02	D	+ 10.54	- 10.38	R	5		+ 3.80	- 5.90	H	+ 7.08	- 5.90	D
9					+ 9.83	- 2.13	E	6		+ 1.59	- 5.46	R	+ 0.43	- 5.09	R
10		+ 14.37	- 4.24	R	+ 10.01	- 4.12	D	7		+ 6.84	- 3.44	E	+ 3.21	- 8.75	D
11		+ 11.62	- 0.84	H	+ 12.25	- 7.63	E	8		+ 10.63	+ 1.59	R	+ 2.80	- 1.00	R
12		+ 7.67	+ 0.65	E	+ 8.89	- 5.14	R	11		+ 5.47	+ 7.41	R	+ 9.61	+ 2.13	E
13		+ 8.18	+ 1.64	D	+ 11.05	- 2.18	D	13		+ 5.03	+ 11.00	E	+ 6.79	+ 10.74	E
16		(+ 4.01)	(+ 14.24)	H	+ 4.53	+ 3.11	D	14					+ 7.74	+ 9.06	D
17		(+ 2.25)	(+ 1.10)	M	+ 3.24	+ 2.17	R	15		+ 8.73	+ 5.87	H	+ 9.16	+ 9.48	R
25					+ 7.64	+ 0.84	R	16		+ 4.65	+ 7.88	D			
26					+ 7.23	+ 1.60	D								

The Notes marked [M] refer to the Meridional Observations; those marked [A and A] refer to those made with the Altitude and Azimuth Instrument.

Feb. 16 [M]. Exceedingly faint.

Mar. 2 [M]. Faint; observed with great difficulty.

Jan. 10 [A and A]. The wind was very high, and the beats of the clock were generally inaudible.

ERRORS of the MOON'S TABULAR PLACE—*continued*.

Day, 1849.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1849.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
	"	"		"	"			"	"		"	"	
April 17				— 0.46	+ 7.81	R	July 5	+ 3.18	+ 6.17	R	+ 1.35	+ 2.86	E
26				+ 0.85	— 3.13	R	6	+ 5.95	+ 5.00	H	+ 5.79	+ 3.79	R
27	+ 4.93	— 11.90	D				7	+ 8.65	+ 5.46	E	+ 3.45	+ 3.18	R
28	+ 2.63	— 6.88	H	+ 5.12	— 7.30	E	8	+ 13.25	+ 7.78	H	+ 5.76	— 0.91	E
30				+ 6.91	— 8.91	D	9	+ 6.11	+ 4.28	E	+ 4.13	+ 6.79	R
May 1				+ 7.22	— 8.30	R	10	+ 9.58	+ 6.86	R	+ 11.28	+ 4.79	R
2				+ 4.63	— 7.78	R	11	+ 12.30	+ 4.52	H	+ 12.64	+ 2.22	E
3	+ 3.56	— 6.14	W E	+ 3.88	— 8.00	D	12				+ 12.85	+ 4.64	R
4	+ 3.64	— 2.57	H	+ 3.05	— 2.93	D	13				+ 10.85	+ 0.28	E
5	+ 3.86	— 2.44	W E	+ 6.99	— 6.37	D	15				+ 1.00	— 1.20	R
7	+ 5.39	+ 1.82	W E	+ 9.76	+ 0.49	D	16				— 3.99	— 5.99	E
8				+ 9.02	+ 5.46	R	23				+ 13.18	— 6.44	D
11				+ 5.59	+ 10.13	R	24	+ 10.31	— 2.29	D	+ 10.28	— 1.21	E
12				+ 4.21	+ 11.86	D	25				+ 5.55	+ 0.90	R
13				+ 8.06	+ 11.88	R	26				+ 2.66	+ 4.23	D
16				— 1.75	+ 10.21	D	27				+ 4.23	+ 2.20	E
17				— 9.64	+ 12.39	R	28	+ 7.13	+ 5.88	E	— 0.58	+ 2.61	R
25				+ 14.65	— 0.01	J H	29	+ 5.66	+ 7.84	D	+ 2.57	+ 7.95	D
26	+ 5.63	— 3.00	M	+ 4.01	— 1.77	R	30	+ 5.05	+ 9.79	D	+ 3.09	+ 6.30	E
27	— 0.44	— 3.17	D	+ 5.88	— 5.45	D	31	+ 1.00	+ 8.81	E	+ 1.21	+ 6.60	R
29	— 0.29	— 7.53	M	+ 3.16	— 7.42	D	Aug. 1	+ 2.81	+ 8.61	J H	— 0.02	+ 7.73	R
30				+ 4.83	— 5.85	D	3	+ 1.81	+ 7.04	M	+ 1.49	+ 5.02	D
31	+ 3.15	— 4.89	M	+ 3.28	— 4.19	R	4	+ 6.10	+ 7.45	R	+ 2.97	+ 3.10	E
June 1	+ 3.39	— 2.83	M	+ 5.15	— 2.83	D	5				+ 5.32	+ 3.42	D
2	+ 6.03	— 0.63	H	+ 4.32	— 1.10	R	6	+ 6.88	+ 5.13	H	+ 2.88	+ 5.43	E
3	+ 5.24	— 1.39	D	+ 3.83	+ 0.64	D	7				+ 7.11	+ 5.90	D
4				+ 4.30	+ 0.85	R	8	+ 10.30	+ 3.38	M	+ 10.98	+ 3.32	E
6				+ 1.77	+ 2.59	D	9				+ 10.71	+ 0.02	D
7				+ 4.65	+ 6.38	R	10				+ 15.16	— 2.63	E
8				+ 4.32	+ 4.77	D	11	+ 11.97	+ 0.49	E	+ 7.64	— 8.21	D
9				+ 7.01	+ 8.46	R	12				+ 8.83	— 8.46	E
10				+ 6.93	+ 8.05	D	13				+ 3.55	— 10.31	D
11	+ 7.07	+ 8.82	H	+ 4.84	+ 9.78	R	14				+ 0.64	— 12.38	E
12				+ 9.64	+ 9.37	D	15				+ 2.31	— 12.84	E
13	+ 3.86	+ 16.69	R	+ 10.62	+ 13.86	R	23				+ 15.30	— 2.83	E
14				+ 6.45	+ 12.06	D	24	+ 8.62	+ 3.18	H	+ 5.97	+ 0.76	D
15				+ 0.67	+ 7.60	D	25				+ 9.06	+ 1.29	E
16				— 2.64	+ 9.07	D	26				+ 6.05	+ 6.95	D
17				+ 0.11	+ 11.58	D	28				— 0.84	+ 7.17	D
22				+ 20.49	— 2.59	D	29	+ 2.83	+ 8.08	H B			
23				+ 13.03	— 8.73	R	31	+ 1.94	+ 7.83	H B	— 0.38	+ 5.58	E
24	+ 9.47	— 5.33	D	+ 14.24	— 9.00	J H	Sep. 2				+ 4.28	+ 9.05	D
25				+ 6.22	— 4.43	R	4				+ 4.79	+ 3.73	D
26				+ 4.66	— 4.31	J H	5	+ 4.50	+ 4.93	E	+ 7.01	+ 2.20	R
27	+ 3.50	+ 0.54	E	+ 4.89	— 5.77	R	6				+ 5.05	+ 5.87	E
28				+ 1.88	— 1.75	R	7				+ 9.46	+ 1.01	D
30				— 3.78	+ 1.76	E	8	+ 8.47	+ 1.88	R	+ 9.38	— 1.62	R
July 1				— 3.62	+ 5.24	R	9	+ 10.16	— 0.20	H	+ 11.06	— 1.15	D
2				+ 0.27	+ 6.27	R	10				+ 6.82	— 5.39	R
4	+ 1.13	+ 6.33	H	+ 2.30	+ 5.96	E	11				+ 5.57	— 10.53	D
							19				+ 21.95	— 3.97	D

June 16 [A and A]. The Moon's limb at the time of the observation in Zenith Distance was scarcely visible, the sky being cloudy, and the Sun above the horizon. June 17 [A and A]. The Moon's limb was very indistinct.
 Aug. 24 and 26 [A and A]. The observations were made with difficulty.

ERRORS OF THE MOON'S TABULAR PLACE—concluded.

Day, 1849.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1849.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Sep. 21	"	"		+10.85	— 4.16	R	Nov. 5	+12.90	— 3.27	H B	+12.53	—10.85	R
22	+ 6.79	— 3.35	H				6				+10.49	—11.76	E
24				+ 0.91	+ 5.86	D	12				+11.77	—13.81	R
25	— 1.08	+ 5.30	R	— 3.21	+ 6.49	E	17				+20.80	+ 0.85	M
26	— 0.74	+ 6.39	D	— 2.46	+ 5.59	D	21				+ 7.23	+ 5.53	R
28				+ 0.73	+ 3.69	E	22	+ 4.89	+ 8.44	E	+ 5.12	+ 3.93	D
30	+ 2.35	+ 8.88	E	+ 4.74	+ 3.72	E	24	+ 7.81	+ 9.43	D	+ 3.50	+ 6.99	R
Oct. 2	+10.04	+ 9.14	M	+13.08	+ 2.52	E	25	+11.72	+ 9.28	E	+13.62	+ 9.79	E
3				+14.80	+ 5.05	E	26	+10.57	+ 6.66	R	+16.39	+ 5.91	M
4	+10.94	+ 6.72	J H	+ 4.82	+ 2.41	R	27	+10.67	+ 8.63	J H	+14.63	+ 0.33	E
5	+ 9.24	+ 2.57	H	+ 2.83	+ 5.35	E	28				+ 9.27	+ 0.76	R
6				+ 7.32	— 0.06	R	29				+13.15	— 2.81	E
8	+ 7.50	+ 1.22	E	+10.40	— 7.10	R	30	+11.17	— 0.42	J H	+ 9.25	— 6.17	E
9	+11.24	— 6.15	D	+ 7.87	—11.27	D	Dec. 1	+13.79	—10.46	H	+12.58	— 1.90	R
10				+11.23	— 9.87	R	3				+ 6.71	— 6.94	D
11				+ 8.38	—12.83	E	4	+ 8.18	— 8.46	R	+ 5.82	— 8.85	D
13				+ 4.40	—14.68	R	5	+ 8.49	— 7.41	D	+ 8.36	—15.81	E
18				+23.38	— 0.82	M	6	+15.66	—10.46	H	+11.36	—14.19	R
19				+21.03	— 0.34	D	8	+ 9.09	— 9.11	D	+ 9.41	—11.34	D
21				+ 7.12	+ 2.64	R	17				+17.58	+ 2.37	R
23				+ 3.66	— 2.70	E	18				+10.66	+ 2.56	D
24				— 0.54	+ 5.64	D	19				+ 9.22	+ 2.34	E
25				+ 2.44	+ 6.01	R	20	+ 6.23	+ 1.89	D	+ 3.77	+ 1.69	R
26				+ 2.46	+ 4.31	E	21	+ 4.09	— 0.11	E	+ 7.23	+ 0.89	D
27				+ 2.62	+ 4.91	D	23	+11.23	+ 2.35	D	+ 8.22	+ 2.19	D
28	+ 3.11	+ 8.62	E	+ 4.79	+ 4.03	E	25				+12.27	+ 3.93	R
29	+ 4.49	+ 8.28	R	+ 5.32	+ 6.71	D	26				+13.87	+ 2.08	D
30				+14.15	— 0.02	E	27	+13.56	— 1.91	J H	+ 8.48	— 1.29	R
31	+12.78	+ 4.64	D	+13.69	+ 0.58	R	28	+13.35	— 0.14	D	+14.30	— 1.96	R
Nov. 1	+ 9.83	+ 2.73	E	+10.82	— 0.54	D	29	+16.69	— 2.65	M	+ 9.41	— 9.04	E
2				+13.39	— 2.96	E	30				+ 6.71	— 7.40	D
4	+11.32	— 1.02	D	+14.56	—10.30	E	31	+ 9.12	— 3.81	E	+ 8.83	— 4.21	D

Dec. 1 [M]. The observation with the Mural Circle is of little value; the sky was cloudy, and rain was falling during the time. Observed at only one wire. The observation with the Transit Instrument is also bad.

Dec. 29 [M]. Very cloudy. Observed at only one wire with the Transit Instrument.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS
OF
THE DURATION OF TRANSIT
OF
THE MOON'S DIAMETER,
WITH THE
NORTH-EAST EQUATOREAL.

1849.

Month and Day, 1849.	Object Observed.	I.	II.	III.	IV.	V. Wire.	Mean of Wires.	Difference of Times of Transit of Limbs.	Observer.
March 8		s		s	s	b m s	b m s	m s	H
	1 L.	49.8	0.0	9.6	19.9	11. 9. 30.0	11. 9. 9.86	2. 9.42	
	2 L.	59.0	9.5	19.0	29.4	11. 11. 39.5	11. 11. 19.28		
	1 L.	3.5	13.7	24.0	34.0	11. 12. 44.0	11. 12. 23.84	2. 9.44	
	2 L.	13.0	23.4	33.0	43.5	11. 14. 53.5	11. 14. 33.28		
	1 L.	11.5	21.5	31.0	41.5	11. 16. 51.6	11. 16. 31.42	2. 9.22	
	2 L.	20.5	30.6	40.6	50.8	11. 19. 0.7	11. 18. 40.64		
Nov. 29	1 L.	22.6	33.0	43.5	53.7	0. 13. 4.5	0. 12. 43.46	2. 24.00	H
	2 L.	46.5	56.6	7.6	18.0	0. 15. 28.6	0. 15. 7.46		
	1 L.	25.5	35.5	46.5	57.0	0. 18. 7.6	0. 17. 46.42	2. 24.74	
	2 L.	50.0	1.4	10.9	21.5	0. 20. 32.0	0. 20. 11.16		
	1 L.	19.6	29.8	40.6	51.0	0. 22. 1.8	0. 21. 40.56	2. 24.36	
	2 L.	43.8	54.5	4.8	15.5	0. 24. 26.0	0. 24. 4.92		
	1 L.	11.7	22.5	32.7	43.6	0. 25. 53.8	0. 25. 32.86	2. 24.18	
	2 L.	36.0	46.6	57.0	7.6	0. 28. 18.0	0. 27. 57.04		
	1 L.	48.5	58.6	9.6	20.0	0. 29. 30.5	0. 29. 9.44	2. 24.42	
	2 L.	12.7	23.5	33.7	44.6	0. 31. 54.8	0. 31. 33.86		

March 8. The correction for defect of illumination is insensible.

Nov. 29. The observations were frequently interrupted by clouds. A correction of $+ 0^s.13$ has been applied to the mean of the observed diameters given below for defect of illumination.

The following Results are obtained, considering the Clock to be about 17^s slow on March 8, and $1^m. 58^s$ slow on Nov. 29.

Day of Observation, 1849.	Observed Mean Duration of Transit.	Approximate Sidereal Time.	Tabular Duration of Transit.	Apparent Error of Tables.
March 8	m s 2. 9.36	h m 11. 14	m s 2. 9.02	s — 0.34
Nov. 29	2. 24.47	0. 24	2. 24.08	— 0.39

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS OF MARS AND NEIGHBOURING STARS

WITH

THE SOUTH-EAST EQUATOREAL;

AND

REDUCTION OF THE OBSERVATIONS.

1849.

Month and Day.	No. of Series.	Name of Object.	Micrometer Reading.	Value in Arc for N. P. D.	Reading for Center in Arc.	Observer.
1849. November 26	1	Lalande 12237 Mars N. L.	99·390 94·634	— 32. 54·09 — 31. 19·62	— " "	M
	2	Lalande 12237 Mars S. L.	99·100 94·293	— 32. 48·32 — 30. 52·99		
	3	Lalande 12237 Mars N. L.	99·165 94·095	— 32. 49·62 — 31. 8·92		
	4	Lalande 12237 Mars S. L.	98·890 92·829	— 32. 44·15 — 30. 43·77		
November 30	5	* (r_1) Mars N. L.	99·717 105·535	— 33. 0·58 — 34. 56·14		H B
	6	* (r_1) Mars S. L.	100·408 105·286	— 33. 14·54 — 34. 51·19		
	7	* (r_1) Mars S. L.	100·208 104·972	— 33. 10·33 — 34. 44·95		
	8	* (r_1) Mars N. L.	100·020 106·295	— 33. 6·60 — 35. 11·23		
December 8	9	* (r_2) Mars S. L. Mars N. L.	95·042 110·475 111·816	— 31. 27·72 — 36. 34·25 — 37. 0·89	— 36. 47·57	R
	10	* (r_2) Mars S. L. Mars N. L.	94·456 109·873 111·072	— 31. 16·09 — 36. 22·30 — 36. 46·11	— 36. 34·21	
	11	* (r_2) Mars S. L. Mars N. L.	93·992 109·510 110·782	— 31. 6·87 — 36. 15·09 — 36. 40·35	— 36. 27·72	
	12	* (r_2) Mars S. L. Mars N. L.	93·750 109·295 110·493	— 31. 2·06 — 36. 10·82 — 36. 34·61	— 36. 22·72	
	13	* (r_2) Mars S. L. Mars N. L.	93·387 108·952 110·335	— 30. 54·85 — 36. 4·01 — 36. 31·47	— 36. 17·74	
December 15	14	* (r_3) Mars N. L. Mars S. L.	108·570 102·575 101·570	— 35. 56·42 — 33. 57·34 — 33. 37·38	— 33. 47·36	R

Throughout the observations micrometer B¹ was used, of which the value of one revolution of the screw = 19"·862.

Nov. 26. The thin wire of micrometer B¹ was used.

Series 1 and 2. Cloudy.

Series 2. The micrometer reading for Mars was set down one revolution smaller.

Series 3 and 4. The observations good.

Nov. 30. The star is in Bessel's Zone No. 405. The star very faint from cloud, and the strong light of the Moon.
Observations not good.

Nov. 30, Dec. 8, and Dec. 15. The thick wire of Micrometer B¹ was used.

Series 9 to 13. Not good; the stars extremely faint, and the planet tremulous and ill-defined.

Approx. Hour Angle E. of Merid.	Approx. N. P. D.	Correction for Refraction in N. P. D.	Correction for Parallax in N. P. D.	Corrected Reading for N. P. D.	Star's Assumed N. P. D.	Resulting N. P. D. of Planet.	Time by Earnshaw for Observation of Planet.	Sidereal Time.	Mean Solar Time.	Seconds of Inter- polated N.P.D. of part observed.	Error of Inter- polated N.P.D.
h m 5. 52	° ' 64. 24 64. 26	' '' + 1. 51.80 1. 51.95	'' -9.85	' '' -31. 2.29 -29. 37.52	° ' '' 64. 24. 44.98	° ' '' 64. 26. 9.75	h m s 0. 24. 0	h m s 0. 24. 52	h m s 8. 2. 21	'' 0.59	'' - 9.16
5. 50		+ 1. 49.90 1. 50.06	-9.81	-30. 58.42 -29. 12.74		26. 30.66	0. 26. 0	0. 26. 52	8. 4. 21	14.90	-15.76
5. 47		+ 1. 47.16 1. 47.30	-9.76	-31. 2.46 -29. 31.33		25. 76.06	0. 29. 30	0. 30. 22	8. 7. 50	59.80	-16.26
5. 45		+ 1. 45.37 1. 45.52	-9.73	-30. 58.78 -29. 7.98		26. 35.78	0. 31. 10	0. 32. 2	8. 9. 30	14.17	-21.61
0. 16	64. 14 64. 12	+ 27.73 27.69	-6.22	-32. 32.85 -34. 34.67	64. 14. 22.26	64. 11. 80.44	5. 54. 32	5. 55. 45	13. 16. 36	55.36	-25.08
0. 12		+ 27.70 27.65	-6.22	-32. 46.84 -34. 29.76		12. 39.34	5. 59. 0	6. 0. 13	13. 21. 3	9.76	-29.58
0. 9		+ 27.67 27.63	-6.22	-32. 42.66 -34. 23.54		12. 41.38	6. 2. 0	6. 3. 13	13. 24. 3	9.36	-32.02
0. 6		+ 27.65 27.61	-6.22	-32. 33.95 -34. 49.84		11. 71.37	6. 4. 30	6. 5. 43	13. 26. 33	54.02	-17.35
3. 27	63. 54 63. 49	+ 44.29 44.16	-7.79	-30. 43.43 -36. 11.20	63. 54. 53.23	63. 49. 25.46	2. 33. 0	2. 33. 15	9. 23. 12	14.61	-10.85
3. 18		+ 42.59 42.45	-7.67	-30. 33.50 -35. 59.43		49. 27.30	2. 41. 30	2. 41. 45	9. 31. 41	13.72	-13.58
3. 14		+ 41.84 41.72	-7.62	-30. 25.03 -35. 53.62		49. 24.64	2. 45. 20	2. 45. 35	9. 35. 30	13.33	-11.31
3. 10		+ 41.15 41.03	-7.56	-30. 20.91 -35. 49.25		49. 24.89	2. 49. 10	2. 49. 25	9. 39. 19	12.93	-11.96
3. 6		+ 40.48 40.35	-7.51	-30. 14.37 -35. 44.90		49. 22.70	2. 53. 5	2. 53. 20	9. 43. 14	12.53	-10.17
0. 36	63. 33 63. 35	+ 27.22 27.26	-6.24	-35. 29.20 -33. 26.34	63. 33. 19.62	63. 35. 22.48	5. 11. 30	5. 11. 45	11. 33. 45	8.94	-13.54

Dec. 8. The star is not identical with that set down for the day in the Circular for the American Expedition; it has not been yet observed at Greenwich, and its place is assumed so as to give errors nearly comparable with those derived from other observations.

Dec. 15. The star is in Bessel's Zone, No. 405.

Month and Day.	No. of Series.	Name of Object.	Micrometer Reading.	Value in Arc for N. P. D.	Reading for Center in Arc.	Observer.
1849. December 15	15	* (r_3)	108.756	— 36. 0.11	— 33. 48.43	R
		Mars N. L.	102.660	— 33. 59.03		
		Mars S. L.	101.592	— 33. 37.82		
	16	* (r_3).	108.572	— 35. 56.46	— 33. 44.63	
		Mars N. L.	102.512	— 33. 56.09		
		Mars S. L.	101.358	— 33. 33.17		
	17	* (r_3).	108.312	— 35. 51.37	— 33. 36.86	
		Mars N. L.	102.113	— 33. 48.17		
		Mars S. L.	100.974	— 33. 25.55		
December 27	18	Mars N. L.	104.317	— 34. 31.95	— 34. 23.35	M
		Mars S. L.	103.451	— 34. 14.74		
		* (r_4).	105.232	— 34. 50.12		
	19	Mars N. L.	104.022	— 34. 26.09	— 34. 16.81	
		Mars S. L.	103.088	— 34. 7.53		
		* (r_4).	104.842	— 34. 42.37		
	20	Mars N. L.	103.422	— 34. 14.17	— 34. 5.32	
		Mars S. L.	102.531	— 33. 56.47		
		* (r_4).	104.208	— 34. 29.78		
	21	Mars N. L.	103.215	— 34. 10.06	— 34. 2.14	
		Mars S. L.	102.417	— 33. 54.21		
		* (r_4).	103.954	— 34. 24.73		
	22	Mars N. L.	103.004	— 34. 5.87	— 33. 56.58	
		Mars S. L.	102.068	— 33. 47.28		
		* (r_4).	103.647	— 34. 18.64		
	23	Mars N. L.	102.768	— 34. 1.18	— 33. 52.94	
		Mars S. L.	101.938	— 33. 44.69		
		* (r_4).	103.511	— 34. 15.94		
1850. January 4	24	Mars N. L.	103.206	— 34. 9.88		R
		* (r_5).	105.008	— 34. 45.67		
	25	Mars S. L.	101.830	— 33. 42.55		
		* (r_5).	104.662	— 34. 38.80		
	26	Mars N. L.	102.770	— 34. 1.22		
		* (r_5).	104.556	— 34. 36.69		
	27	Mars S. L.	101.505	— 33. 36.09		
		* (r_5).	104.363	— 34. 32.86		
	28	Mars N. L.	102.296	— 33. 51.80		
		* (r_5).	104.132	— 34. 28.27		

Dec. 15. Passing clouds: the observations not good.

Dec. 27. The thin wire was used.

Jan. 4. The star extremely faint and difficult to observe: the limbs of the planet badly defined: the thin wire was used.

Approx. Hour Angle E. of Merid.	Approx. N. P. D.	Correction for Refraction in N. P. D.	Correction for Parallax in N. P. D.	Corrected Reading for N. P. D.	Star's Assumed N. P. D.	Resulting N. P. D. of Planet.	Time by Earnshaw for Observation of Planet.	Sidercal Time.	Mean Solar Time.	Seconds of Inter- polated N. P. D. of part observed.	Error of Inter- polated N. P. D.
h m	° '	' "	"	' "	° ' "	° ' "	h m s	h m s	h m s	"	"
0. 31	63. 33	+ 27.12		-35. 32.99	63. 33. 19.62	63. 35. 25.12	5. 16. 0	5. 16. 15	11. 38. 15	8.67	-16.45
	63. 35	27.16	-6.22	-33. 27.49							
0. 27		+ 27.04		-35. 29.42		35. 25.28	5. 20. 30	5. 20. 45	11. 42. 44	8.40	-16.88
		27.08	-6.21	-33. 23.76							
0. 23		+ 26.98		-35. 24.39		35. 27.96	5. 24. 0	5. 24. 15	11. 46. 13	8.19	-19.77
		27.02	-6.21	-33. 16.05							
4. 51	63. 29	+1. 8.92	-8.69	-33. 23.12	63. 28. 35.81						
	63. 28	1. 8.87		-33. 41.25		63. 28. 53.94	0. 36. 55	0. 37. 11	6. 12. 45	36.98	-16.96
4. 44		+1. 5.94	-8.58	-33. 19.45							
		1. 5.89		-33. 36.48		28. 52.84	0. 43. 15	0. 43. 31	6. 19. 4	37.05	-15.79
4. 36		+1. 2.81	-8.45	-33. 10.96							
		1. 2.77		-33. 27.01		28. 51.86	0. 51. 15	0. 51. 31	6. 27. 3	37.13	-14.73
4. 33		+1. 1.67	-8.40	-33. 8.87							
		1. 1.65		-33. 23.08		28. 50.02	0. 55. 0	0. 55. 16	6. 30. 47	37.17	-12.85
4. 30		+1. 0.58	-8.35	-33. 4.35							
		1. 0.54		-33. 18.10		28. 49.56	0. 58. 0	0. 58. 16	6. 33. 47	37.20	-12.36
4. 27		+ 59.53	-8.31	-33. 1.72							
		59.49		-33. 16.45		28. 50.54	1. 1. 0	1. 1. 16	6. 36. 46	37.23	-13.31
1. 6	63. 34	+ 28.27	-5.79	-33. 47.40	63. 33. 9.28						
	63. 33	28.25		-34. 17.42		63. 33. 39.30	4. 10. 0	4. 10. 48	9. 14. 20	33.41	- 5.89
1. 3		+ 28.15	-5.77	-33. 20.17							
		28.13		-34. 10.67		33. 59.78	4. 13. 30	4. 14. 18	9. 17. 50	47.54	-12.24
0. 57		+ 27.90	-5.75	-33. 39.07							
		27.88		-34. 8.81		33. 39.02	4. 18. 30	4. 19. 18	9. 22. 49	33.73	- 5.29
0. 54		+ 27.78	-5.74	-33. 14.05							
		27.75		-34. 5.11		33. 60.34	4. 22. 30	4. 23. 18	9. 26. 48	47.88	-12.46
0. 51		+ 27.67	-5.73	-33. 29.86							
		27.65		-34. 0.62		33. 40.04	4. 25. 0	4. 25. 48	9. 29. 18	33.97	- 6.07

Dec. 27. The star is in Bessel's Zone, No. 405.

Jan. 4. The star is in Bessel's Zone, No. 523.

Month and Day.	No. of Series.	Name of Object.	Micrometer Reading.	Value in Arc for N. P. D.	Reading for Center in Arc.	Observer.
1850. January	4	29	Mars S. L. * (r_s).	101.102 103.948	— 33. 28.09 — 34. 24.62	} R
January	5	30	Mars N. L. * (r_s).	98.338 102.690	— 32. 33.19 — 33. 59.63	
		31	Mars N. L. * (r_s).	97.225 101.725	— 32. 11.08 — 33. 40.46	} H B
		32	Mars N. L. * (r_s).	97.785 102.273	— 32. 22.21 — 33. 51.35	
		33	Mars S. L. * (r_s).	96.785 102.265	— 32. 2.34 — 33. 51.19	
		34	Mars S. L. * (r_s).	94.410 100.065	— 31. 15.17 — 33. 7.49	
		35	Mars S. L. * (r_s).	94.182 99.828	— 31. 10.64 — 33. 2.78	
		36	Mars N. L. * (r_s).	95.070 99.600	— 31. 28.28 — 32. 58.26	
		37	Mars N. L. * (r_s).	94.754 99.275	— 31. 22.00 — 32. 51.80	
January	7	38	Mars N. L. Mars S. L. * (r_s).	98.602 97.120 108.842	— 32. 38.43 — 32. 9.00 — 36. 1.82	} R
		39	Mars N. L. Mars S. L. * (r_s).	98.156 96.640 108.420	— 32. 29.57 — 31. 59.46 — 35. 53.44	
		40	Mars N. L. Mars S. L. * (r_s).	97.785 96.170 108.102	— 32. 22.21 — 31. 50.13 — 35. 47.12	

Jan. 5. The star faint: the thick wire was used.

Series 33. Good.

Jan. 7. Mars was very tremulous and the star exceedingly faint: the thin wire was used.

Series 38. The micrometer-reading for the star was set down 110.842.

Approx. Hour Angle E. of Merid.	Approx. N.P.D.	Correction for Refraction in N.P.D.	Correction for Parallax in N.P.D.	Corrected Reading for N.P.D.	Star's Assumed N.P.D.	Resulting N.P.D. of Planet.	Time by Earnshaw for Observation of Planet.	Sidereal Time.	Mean Solar Time.	Seconds of Inter- polated N. P. D. of part observed.	Error of Inter- polated N. P. D.
h m	° '	' "	"	' "	° ' "	° ' "	h m s	h m s	h m s	"	"
0. 49	63. 34 63. 33	+ 27.61 27.59	-5.72	-33. 6.20 -33. 57.03	63. 33. 9.28	63. 33. 60.11	4. 27. 15	4. 28. 3	9. 31. 32	48.05	-12.06
3. 1	63. 35 63. 33	+ 39.20 39.14	-6.69	-32. 0.68 -33. 20.49	63. 33. 9.24	63. 34. 29.05	2. 13. 37	2. 14. 27	7. 14. 22	24.82	- 4.23
2. 57		+ 38.59 38.53	-6.65	-31. 39.14 -33. 1.93		34. 32.03	2. 18. 0	2. 18. 50	7. 18. 45	25.00	- 7.03
2. 53		+ 37.98 37.93	-6.61	-31. 50.84 -33. 13.42		34. 31.82	2. 21. 50	2. 22. 40	7. 22. 34	25.14	- 6.68
2. 49		+ 37.38 37.34	-6.56	-31. 31.52 -33. 13.85		34. 51.57	2. 25. 45	2. 26. 35	7. 26. 28	39.10	-12.47
2. 19		+ 33.68 33.64	-6.26	-30. 47.75 -32. 33.85		34. 55.34	2. 55. 33	2. 56. 23	7. 56. 11	40.29	-15.05
2. 16		+ 33.33 33.33	-6.23	-30. 43.49 -32. 29.45		34. 55.20	2. 59. 25	3. 0. 15	8. 0. 3	40.44	-14.76
2. 12		+ 32.95 32.90	-6.20	-31. 1.53 -32. 25.36		34. 33.07	3. 2. 48	3. 3. 38	8. 3. 25	26.78	- 6.29
2. 7		+ 32.46 32.42	-6.15	-30. 55.69 -32. 19.38		34. 32.93	3. 8. 0	3. 8. 50	8. 8. 36	26.98	- 5.95
1. 56	63. 37 63. 33	+ 31.52 31.44	-5.97	-31. 58.17 -35. 30.38	63. 33. 9.17	63. 36. 41.38	3. 17. 0	3. 17. 54	8. 9. 47	33.01	- 8.37
1. 51		+ 31.11 31.03	-5.93	-31. 49.34 -35. 22.41		36. 42.24	3. 22. 5	3. 22. 59	8. 14. 51	33.22	- 9.02
1. 43		+ 30.49 30.40	-5.87	-31. 41.55 -35. 16.72		36. 44.34	3. 29. 30	3. 30. 24	8. 22. 15	33.54	-10.80

Jan. 4, 5, and 7. The star is in Bessel's Zone, No. 523.

ROYAL OBSERVATORY, GREENWICH.

ECLIPSES, OCCULTATIONS, AND TRANSITS

OF

JUPITER'S SATELLITES,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1849.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1849.

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Sidereal Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							h m s	h m s	h m s	h m s	h m s	m s
Jan. 17	I	(a) Ecl. disap.		E	S. E. Eq.	Earn.	5. 8. 55.0	5. 8. 40.1	5. 9. 23.78	9. 20. 41.76	5. 9. 14.9	— 8.88
		(b) Ecl. disap.		H	N.E. Eq.	{ Chronometer, Brockb. 427. }	5. 10. 0.0	5. 10. 0.0	5. 10. 43.68	9. 22. 1.44	5. 9. 14.9	— 1.28.78
Jan. 26	I	Occult. em.	Last contact	R	S. E. Eq.	Earn.	4. 42. 0.0	4. 41. 38.5	4. 42. 40.10	8. 18. 39.28	4. 40. . . .	
Jan. 26	II	Occult. em.	First appear.	R	S. E. Eq.	Earn.	5. 52. 50.0	5. 52. 28.5	5. 53. 30.19	9. 29. 17.76	} 5. 55. . . .	
		Occult. em.	Totally emer.	R	S. E. Eq.	Earn.	5. 56. 40.0	5. 56. 18.5	5. 57. 20.20	9. 33. 7.14		
Jan. 31	I	(c) Ecl. disap.		R	46 in. Ach.	Hardy	9. 51. 40.0	9. 51. 40.0	9. 51. 52.01	13. 7. 20.97	9. 52. 20.1	+ 28.09
		(d) Ecl. disap.		H	S. E. Eq.	Earn.	9. 51. 36.0	9. 52. 6.5	9. 52. 18.51	13. 7. 47.41	9. 52. 20.1	+ 1.59
Jan. 31	III	(e) Ecl. disap.		H B	S. E. Eq.	Earn.	12. 53. 8.0	12. 53. 38.8	12. 53. 51.07	16. 8. 50.23	12. 52. 33.4	— 1. 17.67
Feb. 11	I	(f) Ecl. reap. .		R	S. E. Eq.	Earn.	3. 40. 56.0	3. 40. 16.3	3. 40. 51.47	6. 14. 6.24	3. 40. 33.6	— 17.87
Feb. 16	I	Occult. im.	First contact	H	S. E. Eq.	Earn.	8. 52. 0.0	8. 51. 15.5	8. 52. 0.33	11. 4. 44.58	} 8. 53. . . .	
		Occult. im.	Totally imm.	H	S. E. Eq.	Earn.	8. 55. 35.0	8. 54. 50.5	8. 55. 35.34	11. 8. 19.00		
Feb. 16	I	Ecl. reap. .		E	S. E. Eq.	Earn.	11. 26. 43.0	11. 25. 58.5	11. 26. 43.52	13. 39. 2.42	11. 27. 0.4	+ 16.88
Feb. 16	II	Ecl. reap. .		H B	N.E. Eq.	A ¹	14. 33. 14.0	14. 35. 44.1	14. 36. 29.32	16. 48. 17.14	14. 35. 49.8	— 39.52
Feb. 17	I	Ingress . . .	First contact	M	S. E. Eq.	Earn.	6. 8. 0.0	6. 7. 14.7	6. 8. 1.03	8. 17. 16.25	} 6. 12. . . .	
		Ingress . . .	Central bisect	M	S. E. Eq.	Earn.	6. 12. 0.0	6. 11. 14.7	6. 12. 1.04	8. 21. 15.60		
		Ingress . . .	Last contact	M	S. E. Eq.	Earn.	6. 15. 13.0	6. 14. 27.7	6. 15. 14.04	8. 24. 28.07		
Feb. 17	I	Egress . . .	First appear.	H B	S. E. Eq.	Earn.	8. 33. 38.0	8. 32. 52.7	8. 33. 39.22	10. 42. 30.57	} 8. 33. . . .	
		Egress . . .	Central bisect	H B	S. E. Eq.	Earn.	8. 35. 0.0	8. 34. 14.7	8. 35. 1.22	10. 43. 52.36		
		Egress . . .	Last contact	H B	S. E. Eq.	Earn.	8. 36. 20.0	8. 35. 34.7	8. 36. 21.22	10. 45. 12.13		
Feb. 22	III	Ecl. reap. .		D	S. E. Eq.	Earn.	5. 46. 35.0	5. 45. 45.0	5. 46. 40.79	7. 36. 19.96	5. 46. 28.7	— 12.09
Feb. 27	II	Ecl. reap. .		D	S. E. Eq.	Earn.	7. 13. 10.0	7. 13. 13.4	7. 13. 19.76	8. 43. 5.20	7. 13. 50.0	+ 30.24
		Ecl. reap. .		H B	N.E. Eq.	A ¹	7. 12. 21.0	7. 13. 45.6	7. 13. 51.96	8. 43. 37.32	7. 13. 50.0	— 1.96
Mar. 4	I	Ecl. reap. .		R	S. E. Eq.	Earn.	10. 46. 17.0	10. 46. 13.2	10. 46. 31.52	11. 56. 2.50	10. 46. 47.5	+ 15.98
Mar. 4	II	Ingress . . .	First contact	R	S. E. Eq.	Earn.	11. 2. 0.0	11. 1. 56.2	11. 2. 14.55	12. 11. 42.95	} 11. 1. . . .	
		Ingress . . .	Central bisect	R	S. E. Eq.	Earn.	11. 4. 30.0	11. 4. 26.2	11. 4. 44.55	12. 14. 12.55		
		Ingress . . .	Last contact	R	S. E. Eq.	Earn.	11. 7. 15.0	11. 7. 11.2	11. 7. 29.56	12. 16. 57.11		
Mar. 5	IV	(g) Ecl. disap.		H B	46 in. Ach.	Hardy	8. 58. 28.0	8. 58. 28.0	8. 58. 48.57	10. 4. 41.29	8. 59. 46.7	+ 58.13
		(h) Ecl. disap.		E	N.E. Eq.	A ¹	8. 59. 55.0	9. 0. 21.7	9. 0. 42.27	10. 6. 34.68	8. 59. 46.7	— 55.57

(a) Very faint; the observation uncertain.

(b) Cloudy: the chronometer was set to beat in coincidence with the Transit clock at the time of observation.

(c) Difficult to observe, the Satellite being so near the body of Jupiter, and the sky hazy.

(d) Hazy.

(e) The observation considered good.

(f) The air being very hazy, and the Satellite reappearing so near the body of Jupiter, the observation may probably be a few seconds too late.

(g) Certain to 5 seconds.

(h) Very good.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1849—concluded.

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Sidereal Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							h m s	h m s	h m s	h m s	h m s	m s
Mar. 5	IV	(i) Ecl. reap..		H B	S. E. Eq.	Earn.	13. 44. 10.0	13. 44. 5.2	13. 44. 26.23	14. 49. 32.16	13. 46. 47.6	+ 2. 21.37
		(k) Ecl. reap..		E	N. E. Eq.	A ¹	13. 44. 5.0	13. 44. 31.8	13. 44. 52.83	14. 49. 58.69	13. 46. 47.6	+ 1. 54.77
Mar. 6	II	Occult. im.	First contact	D	S. E. Eq.	Earn.	6. 1. 30.0	6. 1. 24.0	6. 1. 46.52	7. 4. 12.34	} 6. 2. ...	
		Occult. im.	Totally imm.	D	S. E. Eq.	Earn.	6. 4. 0.0	6. 3. 54.0	6. 4. 16.52	7. 6. 41.92		
Mar. 8	III	Ecl. reap..		R	S. E. Eq.	Earn.	14. 41. 40.0	14. 41. 29.2	14. 41. 56.87	15. 35. 5.66	14. 41. 16.4	— 40.47
Mar. 20	I	Occult. im.	First contact	H B	S. E. Eq.	Earn.	6. 50. 5.0	6. 49. 34.8	6. 50. 28.38	6. 57. 43.54	} 6. 53. ...	
		Occult. im.	Central bisect	H B	S. E. Eq.	Earn.	6. 51. 35.0	6. 51. 4.8	6. 51. 58.38	6. 59. 13.29		
		Occult. im.	Totally imm.	H B	S. E. Eq.	Earn.	6. 53. 45.0	6. 53. 14.8	6. 54. 8.38	7. 1. 22.93		
Mar. 29	II	Ingress ...	Last contact	H	Trans. Instr.	Hardy	9. 0. 30.0	9. 0. 30.0	9. 0. 43.08	8. 32. 13.74	8. 50.	
Mar. 31	II	Ecl. reap..		H B	S. E. Eq.	Earn.	9. 4. 58.0	9. 5. 12.4	9. 5. 29.59	8. 29. 7.66	9. 5. 51.9	+ 22.31
		Ecl. reap..		E	N. E. Eq.	A ¹	9. 4. 5.0	9. 5. 39.7	9. 5. 56.89	8. 29. 34.88	9. 5. 51.9	— 4.99
Apr. 5	I	Ecl. reap..		H B	S. E. Eq.	Earn.	9. 28. 5.0	9. 27. 15.2	9. 27. 42.09	8. 31. 37.00	9. 28. 10.3	+ 28.21
		Ecl. reap..		H	N. E. Eq.	A ¹	9. 27. 50.0	9. 27. 27.9	9. 27. 54.79	8. 31. 49.66	9. 28. 10.3	+ 15.51
Apr. 6	III	Ecl. reap..		R	S. E. Eq.	Earn.	8. 31. 5.0	8. 30. 14.5	8. 30. 43.32	7. 30. 51.65	8. 30. 13.0	— 30.32
Apr. 7	II	(l) Ecl. reap..		H B	S. E. Eq.	Earn.	12. 10. 35.0	12. 9. 43.4	12. 10. 14.71	11. 5. 51.18	12. 10. 44.1	+ 29.39
Apr. 14	II	Occult. im.	First contact	M	S. E. Eq.	Earn.	9. 51. 0.0	9. 49. 59.8	9. 50. 44.77	8. 19. 12.74	} 9. 54. ...	
		Occult. im.	Central bisect	M	S. E. Eq.	Earn.	9. 53. 30.0	9. 52. 29.8	9. 53. 14.77	8. 21. 42.33		
		Occult. im.	Totally imm.	M	S. E. Eq.	Earn.	9. 56. 15.0	9. 55. 14.8	9. 55. 59.77	8. 24. 26.88		
Apr. 20	III	Ecl. disap.		R	S. E. Eq.	Earn.	13. 54. 8.0	13. 52. 58.3	13. 53. 56.36	11. 58. 9.05	13. 52. 15.5	— 1. 40.86
May 4	I	Ingress ...	First contact	H B	S. E. Eq.	Earn.	12. 46. 20.0	12. 45. 59.2	12. 46. 25.96	9. 55. 47.00	} 12. 49. ...	
		Ingress ...	Central bisect	H B	S. E. Eq.	Earn.	12. 48. 10.0	12. 47. 49.2	12. 48. 15.96	9. 57. 36.70		
		Ingress ...	Last contact	H B	S. E. Eq.	Earn.	12. 50. 45.0	12. 50. 24.2	12. 50. 50.96	10. 0. 11.27		
May 5	I	Ecl. reap..		H	N. E. Eq.	A ¹	13. 34. 52.0	13. 34. 49.0	13. 35. 17.32	10. 40. 34.43	13. 35. 22.1	+ 4.78
June 13	I	(m) Ecl. reap..		R	S. E. Eq.	Earn.	14. 40. 50.0	14. 41. 25.5	14. 41. 50.86	9. 13. 36.60	14. 41. 44.9	— 5.96
		(n) Ecl. reap..		H B	N. E. Eq.	A ¹	14. 40. 19.0	14. 41. 53.0	14. 42. 18.36	9. 14. 4.03	14. 41. 44.9	— 33.46
Dec. 5	III	(o) Ecl. disap.		H B	N. E. Eq.	A ¹	12. 17. 20.0	12. 17. 45.4	12. 17. 50.82	19. 18. 0.27	12. 16. 17.5	— 1. 33.32
		Ecl. disap.		D	S. E. Eq.	Earn.	12. 18. 25.0	12. 18. 34.6	12. 18. 40.02	19. 18. 49.33	12. 16. 17.5	— 2. 22.52
Dec. 8	II	(p) Ecl. disap.		R	S. E. Eq.	Earn.	6. 19. 45.0	6. 19. 51.7	6. 19. 59.97	13. 9. 20.31	6. 19. 14.3	— 45.67
Dec. 28	I	Ecl. disap.		D	S. E. Eq.	Earn.	6. 42. 0.0	6. 41. 50.0	6. 42. 15.34	12. 12. 53.80	6. 42. 8.1	— 7.24
		Ecl. disap.		H B	N. E. Eq.	A ¹	6. 41. 48.0	6. 41. 53.7	6. 42. 19.04	12. 12. 57.49	6. 42. 8.1	— 10.94

(i) Good.

(k) Very good.

(l) The observation very good.

(m) Good.

(n) Good.

(o) Observed in strong daylight. The satellite was exceedingly faint.

(p) Not good, the planet being near the horizon.

OCCULTATIONS of STARS by the MOON.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock	Sidereal Time.	Mean Solar Time.
Jan. 5	θ^1 Tauri	Disap.	Dark	R	Alt. & Az.	G^1	^h 9.41. ^m 1.0	^h 9.41.33.21	^h 9.41.53.26	^h 14.39.37.52
	θ^1 Tauri	Disap.	Dark	H B	N. E. Eq.	{ Chro. P & F 1826. }	14.46.38.7	9.41.33.43	9.41.53.49	14.39.37.75
Jan. 5	θ^2 Tauri	Disap.	Dark	R	Alt. & Az.	G^1	9.48.22.0	9.48.54.20	9.49.14.27	14.46.57.33
	θ^2 Tauri	Disap.	Dark	H B	N. E. Eq.	{ Chro. P & F 1826. }	14.53.58.9	9.48.54.83	9.49.14.89	14.46.57.95
Jan. 5	θ^2 Tauri	Reap..	Bright	R	Alt. & Az.	G^1	10.28.21.0	10.28.53.20	10.29.13.33	15.26.49.84
Jan. 5	B. A. C. 1391..	Disap.	Dark	H B	N. E. Eq.	{ Chro. P & F 1826. }	15.35.40.9	10.30.43.64	10.31. 3.87	15.28.40.08
Jan. 5	θ^1 Tauri	Reap..	Bright	H B	N. E. Eq.	{ Chro. P & F 1826. }	15.38. 3.0	10.33. 6.13	10.33.26.26	15.31. 2.08
	θ^1 Tauri	Reap..	Bright	M	S. E. Eq.	Earn.	(a) 10.33.13.5	10.33.10.20	10.33.30.34	15.31. 6.15
	θ^1 Tauri	Reap..	Bright	R	Alt. & Az.	G^1	10.32.39.0	10.33.11.20	10.33.31.34	15.31. 7.14
Jan. 5	B. A. C. 1394..	Disap.	Dark	M	S. E. Eq.	Earn.	10.34.13.0	10.34. 9.80	10.34.29.94	15.32. 5.59
Feb. 27	B. A. C. 830 ..	Disap.	Dark	D	Alt. & Az.	G^1	(b) 5.20.39.4	5.21.27.22	5.21.33.41	6.51.37.17
Mar. 29	111 Tauri.....	Disap.	Dark	R	Alt. & Az.	G^1	(c) 7.57.47.0	7.57.53.10	7.58. 6.10	7.29.47.02
	111 Tauri.....	Disap.	Dark	H B	S. E. Eq.	Earn.	(d) 7.57.38.5	7.57.54.80	7.58. 7.80	7.29.48.72
Mar. 29	111 Tauri.....	Reap..	Bright	H B	S. E. Eq.	Earn.	(e) 9. 3.12.5	9. 3.28.90	9. 3.42.00	8.35.12.18
	117 Tauri.....	Disap.	Dark	H B	S. E. Eq.	Earn.	(f) 9.51.23.8	9.51.40.30	9.51.53.47	9.23.15.74
July 12	f Piscium.....	Reap..	Dark	R	Alt. & Az.	G^1	20.15.17.0	20.15.28.40	20.15.39.36	12.52.29.00
	f Piscium.....	Reap..	Dark	H B	N. E. Eq.	A^1	20.13.55.6	20.15.30.60	20.15.41.56	12.52.31.19
Sep. 5	ν Piscium.....	Disap.	Bright	H B	S. E. Eq.	Earn.	(g) 21.30.53.0	21.30.43.70	21.31.10.39	10.31.32.68
	ν Piscium.....	Disap.	Bright	E	N. E. Eq.	A^1	21.30. 6.0	21.30.45.30	21.31.11.99	10.31.34.27
Sep. 5	ν Piscium.....	Reap..	Dark	E	N. E. Eq.	A^1	22.10.56.5	22.11.35.80	22.12. 2.53	11.12.18.12
	ν Piscium.....	Reap..	Dark	H B	S. E. Eq.	Earn.	(h) 22.11.45.5	22.11.36.20	22.12. 2.93	11.12.18.52
Sep. 8	θ^2 Tauri.....	Disap.	Bright	E	N. E. Eq.	A^1	(i) 22.19.45.0	22.20.41.40	22.21.12.15	11. 9.38.52
	θ^2 Tauri.....	Disap.	Bright	R	Alt. & Az.	G^1	(k) 22.20.43.0	22.20.56.50	22.21.27.25	11. 9.53.59
Nov. 29	γ Tauri	Disap.	Bright	R	S. E. Eq.	Earn.	(l) 0.17. 2.0	0.18.13.30	0.18.13.97	7.43.56.76
	γ Tauri	Disap.	Bright	E	Alt. & Az.	G^1	0.18. 5.0	0.18.15.30	0.18.15.97	7.43.58.75
	γ Tauri	Disap.	Bright	H	N. E. Eq.	A^1	(m) 0.16.22.0	0.18.20.50	0.18.21.17	7.44. 3.94

Jan. 5. For the observations with the N. E. Equatoreal, the mean time chronometer Parkinson and Frodsham 1826 was used, the clock being under repair. Its error on mean time from two comparisons with the Transit Clock (by the method of coincidence of beats) was 7^m. 0^s.95 fast at the commencement, and 7^m. 0^s.92 fast at the end of the observations.

(a) Excellent: at the time noted a very faint image of the star was seen, which in about half a second became quite distinct.

(b) Very good: the unilluminated portion of the Moon was distinctly visible.

(c) Very cloudy: a small star of the 8.9th magnitude in the same parallel disappeared at 7^h.55^m.8^s by the clock, but the observation is doubtful to two or three seconds.

(d) Very cloudy.

(e) Very good,

(f) Very good.

(g) Pretty good: the star became very faint when it approached the Moon's limb.

(h) Good.

(i) Very cloudy; the observation doubtful.

(k) Very cloudy; the observation uncertain.

(l) Extremely faint, owing to thin clouds and the brightness of the Moon.

(m) Cloudy; uncertain to two or three seconds.

Disappearance of θ^1 Tauri, 1849, January 5, $14^h.39^m.37^s.75 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$145.28.22.35$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$65.21.59.25$	$+ x$	$+ 0.6358$	$\times t$
Moon's N. P. D.	$73.34.39.30$	$+ y$	$- 0.0949$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$60.26.56$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.28.26$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.	$64.59.31.20$	$+ e''$		
Star's N. P. D.....	$74.22.48.00$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$65.38.17.32$	$+ e$	$+ 0.0272 \times t$	$+ 2.3261 \times m$
Geocentric N. P. D. of corresponding point.....	$73.39.12.40$	$+ f$	$- 0.0425 \times t$	$- 2.6156 \times m$

Geocentric distance of center from corresponding point,

$$16.17.29 + 0.9213 \times \left\{ + e - x - 0.6086 \times t + 2.3261 \times m \right\} \\ + 0.2800 \times \left\{ f - 0.0425 \times t - 2.6156 \times m \right\} \\ - 0.2788 \times \left\{ y - 0.0949 \times t \right\}$$

Final Equation.

$$+ 10''.97 = + 0.9213 \times e + 0.2800 \times f - 0.9213 \times x - 0.2788 \times y - 0.5461 \times t + 1.4106 \times m - 0.9883 \times n$$

Disappearance of θ^2 Tauri, 1849, January 5, $14^h.46^m.57^s.95 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$147.18.43.35$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$65.26.39.00$	$+ x$	$+ 0.6358$	$\times t$
Moon's N. P. D.	$73.33.57.29$	$+ y$	$- 0.0949$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$60.26.64$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	$16.28.28$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$65.0.55.50$	$+ e''$		
Star's N. P. D.....	$74.28.16.50$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$65.39.51.88$	$+ e$	$+ 0.0239 \times t$	$+ 2.3364 \times m$
Geocentric N. P. D. of corresponding point	$73.44.20.04$	$+ f$	$- 0.0414 \times t$	$- 2.6365 \times m$

Geocentric distance of center from corresponding point,

$$16.23.19 + 0.7427 \times \left\{ + e - x - 0.6119 \times t + 2.3364 \times m \right\} \\ + 0.6338 \times \left\{ f - 0.0414 \times t - 2.6365 \times m \right\} \\ - 0.6330 \times \left\{ y - 0.0949 \times t \right\}$$

Final Equation.

$$+ 5''.09 = + 0.7427 \times e + 0.6338 \times f - 0.7427 \times x - 0.6330 \times y - 0.4206 \times t + 0.0642 \times m - 0.9883 \times n$$

Reappearance of θ^2 Tauri, 1849, January 5, $15^h. 26^m. 49^s.84 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$157. 18. 19.95$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$65. 51. 59.85$	$+ x$	$+ 0.6358$	$\times t$
Moon's N. P. D.	$73. 30. 10.78$	$+ y$	$- 0.0949$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 27. 03$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16. 28. 38$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$65. 0. 55.50$	$+ e''$		
Star's N. P. D.	$74. 28. 16.50$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$65. 40. 11.96$	$+ e$	$- 0.0062 \times t + 2.3565 \times m$	
Geocentric N. P. D. of corresponding point	$73. 42. 34.26$	$+ f$	$- 0.0421 \times t - 2.7422 \times m$	

Geocentric distance of center from corresponding point,

$$16.46.95 + 0.6470 \times \left\{ -e + x + 0.6420 \times t - 2.3565 \times m \right\} \\ + 0.7388 \times \left\{ f - 0.0421 \times t - 2.7422 \times m \right\} \\ - 0.7382 \times \left\{ y - 0.0949 \times t \right\}$$

Final Equation.

$$-18''.57 = -0.6470 \times e + 0.7388 \times f + 0.6470 \times x - 0.7382 \times y + 0.4544 \times t - 3.5505 \times m - 0.9884 \times n$$

Disappearance of B. A. C. 1391, 1849, January 5, $15^h. 28^m. 40^s.08 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$157. 45. 58.05$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$65. 53. 13.05$	$+ x$	$+ 0.6358$	$\times t$
Moon's N. P. D.	$73. 30. 0.41$	$+ y$	$- 0.0949$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 27. 05$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16. 28. 38$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$65. 29. 4.65$	$+ e''$		
Star's N. P. D.	$74. 8. 29.90$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$66. 8. 24.97$	$+ e$	$- 0.0062 \times t + 2.3603 \times m$	
Geocentric N. P. D. of corresponding point	$73. 22. 51.89$	$+ f$	$- 0.0434 \times t - 2.7380 \times m$	

Geocentric distance of center from corresponding point,

$$16.13.48 + 0.8608 \times \left\{ +e - x - 0.6420 \times t + 2.3603 \times m \right\} \\ - 0.4397 \times \left\{ f - 0.0434 \times t - 2.7380 \times m \right\} \\ + 0.4409 \times \left\{ y - 0.0949 \times t \right\}$$

Final Equation.

$$+14''.90 = +0.8608 \times e - 0.4397 \times f - 0.8608 \times x + 0.4409 \times y - 0.5753 \times t + 3.2356 \times m - 0.9884 \times n$$

Reappearance of θ' Tauri, 1849, Jan. 5, $15^h.31^m.6^s.15 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$158.22.35.10$	$''$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$65.54.43.05$	$+ x$	$''$	$+ 0.6358$	$\times t$
Moon's N. P. D.	$73.29.46.68$	$+ y$	$''$	$- 0.0949$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60.27.07$	$\times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter.....	$16.28.39$	$\times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc.....	$64.59.31.20$	$+ e''$			
Star's N. P. D.	$74.22.48.00$	$+ f$	$''$	$''$	
Geocentric R. A. of corresponding point in arc....	$65.38.46.58$	$+ e$	$''$	$- 0.0098 \times t + 2.3554 \times m$	
Geocentric N. P. D. of corresponding point.....	$73.36.55.20$	$+ f$	$''$	$- 0.0425 \times t - 2.7528 \times m$	

Geocentric distance of center from corresponding point,

$$16.52.50 + 0.8689 \times \left\{ -e + x + 0.6456 \times t - 2.3554 \times m \right\} \\ + 0.4238 \times \left\{ f - 0.0425 \times t - 2.7528 \times m \right\} \\ - 0.4226 \times \left\{ y - 0.0949 \times t \right\}$$

Final Equation.

$$-24''.11 = -0.8689 \times e + 0.4238 \times f + 0.8689 \times x - 0.4226 \times y + 0.5831 \times t - 3.2132 \times m - 0.9884 \times n$$

Disappearance of B. A. C. 1394, 1849, Jan. 5, $15^h.32^m.5^s.59 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$158.37.29.10$	$''$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$65.55.20.85$	$+ x$	$''$	$+ 0.6358$	$\times t$
Moon's N. P. D.	$73.29.41.10$	$+ y$	$''$	$- 0.0949$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$60.24.90$	$\times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	$16.28.39$	$\times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	$65.32.26.40$	$+ e''$			
Star's N. P. D.	$74.10.54.20$	$+ f$	$''$	$''$	
Geocentric R. A. of corresponding point in arc....	$66.11.43.30$	$+ e$	$''$	$- 0.0090 \times t + 2.3569 \times m$	
Geocentric N. P. D. of corresponding point.....	$73.25.8.69$	$+ f$	$''$	$- 0.0424 \times t - 2.7455 \times m$	

Geocentric distance of center from corresponding point,

$$16.20.39 + 0.9209 \times \left\{ +e - x - 0.6448 \times t + 2.3569 \times m \right\} \\ - 0.2771 \times \left\{ f - 0.0424 \times t - 2.7455 \times m \right\} \\ + 0.2785 \times \left\{ y - 0.0949 \times t \right\}$$

Final Equation.

$$+8''.00 = +0.9209 \times e - 0.2771 \times f - 0.9209 \times x + 0.2785 \times y - 0.6084 \times t + 2.9313 \times m - 0.9884 \times n$$

Disappearance of B. A. C. 830, 1849, February 27, $6^h.51^m.37^s.17 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$80.23.21.15$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$38.52.37.05$	$+ x$	$+ 0.5788$	$\times t$
Moon's N. P. D.	$79.28.5.10$	$+ y$	$- 0.1553$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$59.6.27$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.6.39$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$38.35.17.70$	$+ e''$		
Star's N. P. D.....	$79.54.30.90$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$39.0.19.26$	$+ e$	$+ 0.1207 \times t$	$+ 1.5016 \times m$
Geocentric N. P. D. of corresponding point	$79.14.2.12$	$+ f$	$- 0.0186 \times t$	$- 2.4288 \times m$

Geocentric distance of center from corresponding point,

$$15.57.58 + 0.4661 \times \left\{ + e - x - 0.4581 \times t + 1.5016 \times m \right\} \\ - 0.8801 \times \left\{ f - 0.0186 \times t - 2.4288 \times m \right\} \\ + 0.8803 \times \left\{ y - 0.1553 \times t \right\}$$

Final Equation.

$$+ 8''.81 = + 0.4661 \times e - 0.8801 \times f - 0.4661 \times x + 0.8803 \times y - 0.3338 \times t + 2.8375 \times m - 0.9664 \times n$$

Disappearance of 111 Tauri, 1849, March 29, $7^h.29^m.48^s.72 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$119.31.57.00$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$79.2.53.70$	$+ x$	$+ 0.6237$	$\times t$
Moon's N. P. D.	$72.7.15.29$	$+ y$	$- 0.0534$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$59.26.26$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.11.83$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$78.54.13.20$	$+ e''$		
Star's N. P. D.....	$72.45.50.00$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$79.19.35.56$	$+ e$	$+ 0.1256 \times t$	$+ 1.5224 \times m$
Geocentric N. P. D. of corresponding point	$72.9.59.70$	$+ f$	$- 0.0305 \times t$	$- 2.1503 \times m$

Geocentric distance of center from corresponding point,

$$16.7.67 + 0.9380 \times \left\{ + e - x - 0.4981 \times t + 1.5224 \times m \right\} \\ + 0.1706 \times \left\{ f - 0.0305 \times t - 2.1503 \times m \right\} \\ - 0.1692 \times \left\{ y - 0.0534 \times t \right\}$$

Final Equation.

$$+ 4''.16 = + 0.9380 \times e + 0.1706 \times f - 0.9380 \times x - 0.1692 \times y - 0.4634 \times t + 1.0612 \times m - 0.9718 \times n$$

Reappearance of 111 Tauri, 1849, March 29, 8^h. 35^m. 12^s.18 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	135. 55. 30.00	"	+	15.0	$\times t$
Moon's Right Ascension in arc.....	79. 43. 40.95	+	x	+	0.6238 $\times t$
Moon's N. P. D.	72. 3. 53.76	+	y	-	0.0494 $\times t$
Moon's Horizontal Equatoreal Parallax.....	59. 25. 34	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	16. 11. 59	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	78. 54. 13.20	+	e''		
Star's N. P. D.	72. 45. 50.00	+	f		
Geocentric R. A. of corresponding point in arc....	79. 26. 54.44	+	e	+	0.0894 $\times t$ + 1.9612 $\times m$
Geocentric N. P. D. of corresponding point.....	72. 7. 39.72	+	f	-	0.0393 $\times t$ - 2.2903 $\times m$

Geocentric distance of center from corresponding point,

$$16. 24. 06 + 0.9262 \times \left\{ -e + x + 0.5344 \times t - 1.9612 \times m \right\} \\ + 0.2303 \times \left\{ f - 0.0393 \times t - 2.2903 \times m \right\} \\ - 0.2289 \times \left\{ y - 0.0494 \times t \right\}$$

Final Equation.

$$- 12''.47 = - 0.9262 \times e + 0.2303 \times f + 0.9262 \times x - 0.2289 \times y + 0.4972 \times t - 2.3440 \times m - 0.9716 \times n$$

Disappearance of 117 Tauri, 1849, March 29, 9^h. 23^m. 15^s.74 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	147. 58. 22.05	"	+	15.0	$\times t$
Moon's Right Ascension in arc.....	80. 13. 39.90	+	x	+	0.6238 $\times t$
Moon's N. P. D.	72. 1. 31.16	+	y	-	0.0494 $\times t$
Moon's Horizontal Equatoreal Parallax.....	59. 24. 66	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	16. 11. 41	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	79. 48. 58.35	+	e''		
Star's N. P. D.....	72. 53. 38.10	+	f		
Geocentric R. A. of corresponding point in arc....	80. 25. 6.79	+	e	+	0.0612 $\times t$ + 2.1684 $\times m$
Geocentric N. P. D. of corresponding point.....	72. 13. 31.65	+	f	-	0.0431 $\times t$ - 2.4063 $\times m$

Geocentric distance of center from corresponding point,

$$16. 12. 87 + 0.6396 \times \left\{ +e - x - 0.5626 \times t + 2.1684 \times m \right\} \\ + 0.7408 \times \left\{ f - 0.0431 \times t - 2.4063 \times m \right\} \\ - 0.7402 \times \left\{ y - 0.0494 \times t \right\}$$

Final Equation.

$$- 1''.46 = + 0.6396 \times e + 0.7408 \times f - 0.6396 \times x - 0.7402 \times y - 0.3551 \times t - 0.3957 \times m - 0.9714 \times n$$

Reappearance of γ Piscium, 1849, July 12, 12^h. 52^m. 29^s.00 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	303. 54. 50 ^o .40 ['] + 15 ^{''} .0 ^{''} $\times t$
Moon's Right Ascension in arc.....	17. 10. 38 ^o .25 ['] + x + 0 ^{''} .5352 $\times t$
Moon's N. P. D.	86. 32. 14 ^o .34 ['] + y - 0 ^{''} .1801 $\times t$
Moon's Horizontal Equatoreal Parallax.....	57. 54 ^o .00 ['] $\times \left(1 + \frac{m}{1000}\right)$
Moon's Semidiameter.....	15. 46 ^o .64 ['] $\times \left(1 + \frac{n}{1000}\right)$
Star's Right Ascension in arc.....	17. 30. 32 ^o .55 ['] + e''
Star's N. P. D.	87. 10. 48 ^o .30 ['] + f
Geocentric R. A. of corresponding point in arc...	16. 55. 48 ^o .79 ['] + e + 0 ^{''} .0431 $\times t$ - 2 ^{''} .0838 $\times m$
Geocentric N. P. D. of corresponding point.....	86. 26. 16 ^o .98 ['] + f + 0 ^{''} .0070 $\times t$ - 2 ^{''} .6713 $\times m$

Geocentric distance of center from corresponding point,

$$15. 57^o.01['] + 0^{''}.9260 $\times \left\{ -e + x + 0^{''}.4921 \times t + 2^{''}.0838 \times m \right\}$

$$- 0^{''}.3733 \times \left\{ f + 0^{''}.0070 \times t - 2^{''}.6713 \times m \right\}$$

$$+ 0^{''}.3735 \times \left\{ y - 0^{''}.1801 \times t \right\}$$$$

Final Equation.

$$- 10''³⁷ = - 0^{''}.9260 $\times e$ - 0^{''}.3733 $\times f$ + 0^{''}.9260 $\times x$ + 0^{''}.3735 $\times y$ + 0^{''}.3858 $\times t$ + 2^{''}.9268 $\times m$ - 0^{''}.9466 $\times n$$$

Disappearance of γ Piscium, 1849, September 5, 10^h. 31^m. 34^s.27 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	322. 47. 59 ^o .85 ['] + 15 ^{''} .0 ^{''} $\times t$
Moon's Right Ascension in arc.....	22. 48. 6 ^o .30 ['] + x + 0 ^{''} .5448 $\times t$
Moon's N. P. D.	84. 48. 6 ^o .93 ['] + y - 0 ^{''} .1781 $\times t$
Moon's Horizontal Equatoreal Parallax.....	58. 8. 99 ^o $\times \left(1 + \frac{m}{1000}\right)$
Moon's Semidiameter.....	15. 50 ^o .79 ['] $\times \left(1 + \frac{n}{1000}\right)$
Star's Right Ascension in arc.....	23. 24. 17 ^o .85 ['] + e''
Star's N. P. D.	85. 16. 30 ^o .70 ['] + f
Geocentric R. A. of corresponding point in arc.....	22. 52. 32 ^o .17 ['] + e + 0 ^{''} .0759 $\times t$ - 1 ^{''} .9057 $\times m$
Geocentric N. P. D. of corresponding point.....	84. 32. 51 ^o .74 ['] + f + 0 ^{''} .0112 $\times t$ - 2 ^{''} .6190 $\times m$

Geocentric distance of center from corresponding point,

$$15. 52^o.71['] + 0^{''}.2766 $\times \left\{ +e - x - 0^{''}.4689 \times t - 1^{''}.9057 \times m \right\}$

$$- 0^{''}.9605 \times \left\{ f + 0^{''}.0112 \times t - 2^{''}.6190 \times m \right\}$$

$$+ 0^{''}.9605 \times \left\{ y - 0^{''}.1781 \times t \right\}$$$$

Final Equation.

$$- 1''⁹² = + 0^{''}.2766 $\times e$ - 0^{''}.9605 $\times f$ - 0^{''}.2766 $\times x$ + 0^{''}.9605 $\times y$ - 0^{''}.3116 $\times t$ + 1^{''}.9884 $\times m$ - 0^{''}.9508 $\times n$$$

Reappearance of ν Piscium, 1849, September 5, $11^h.12^m.18^s.12 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$333. 0. 37. 95$	$''$	$+ 15. 0$	$\times t$
Moon's Right Ascension in arc	$23. 10. 17. 40$	$+ x$	$+ 0. 5448$	$\times t$
Moon's N. P. D.	$84. 40. 51. 57$	$+ y$	$- 0. 1781$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$58. 9. 69$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	$15. 50. 98$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$23. 24. 17. 85$	$+ e''$		
Star's N. P. D.	$85. 16. 30. 70$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$22. 56. 12. 37$	$+ e$	$+ 0. 0984 \times t$	$- 1. 6855 \times m$
Geocentric N. P. D. of corresponding point.....	$84. 33. 17. 40$	$+ f$	$+ 0. 0098 \times t$	$- 2. 5933 \times m$

Geocentric distance of center from corresponding point,

$$15. 56. 06 + 0. 8760 \times \left\{ -e + x + 0. 4464 \times t + 1. 6855 \times m \right\} \\ - 0. 4748 \times \left\{ f + 0. 0098 \times t - 2. 5933 \times m \right\} \\ + 0. 4752 \times \left\{ y - 0. 1781 \times t \right\}$$

Final Equation.

$$- 5''. 08 = - 0. 8760 \times e - 0. 4748 \times f + 0. 8760 \times x + 0. 4752 \times y + 0. 3018 \times t + 2. 7059 \times m - 0. 9510 \times n$$

Disappearance of θ^2 Tauri, 1849, September 8, $11^h.9^m.53^s.59 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$335. 21. 48. 75$	$''$	$+ 15. 0$	$\times t$
Moon's Right Ascension in arc	$64. 18. 22. 65$	$+ x$	$+ 0. 6008$	$\times t$
Moon's N. P. D.	$73. 59. 25. 48$	$+ y$	$- 0. 1041$	$\times t$
Moon's Horizontal Equatoreal Parallax	$59. 3. 21$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16. 5. 50$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$65. 1. 13. 05$	$+ e''$		
Star's N. P. D.....	$74. 28. 8. 60$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$64. 22. 49. 65$	$+ e$	$+ 0. 0010 \times t$	$- 2. 3034 \times m$
Geocentric N. P. D. of corresponding point.....	$73. 43. 57. 05$	$+ f$	$+ 0. 0407 \times t$	$- 2. 6516 \times m$

Geocentric distance of center from corresponding point,

$$16. 3. 20 + 0. 2558 \times \left\{ +e - x - 0. 5998 \times t - 2. 3034 \times m \right\} \\ - 0. 9638 \times \left\{ f + 0. 0407 \times t - 2. 6516 \times m \right\} \\ + 0. 9638 \times \left\{ y - 0. 1041 \times t \right\}$$

Final Equation.

$$+ 2''. 30 = + 0. 2558 \times e - 0. 9638 \times f - 0. 2558 \times x + 0. 9638 \times y - 0. 2929 \times t + 1. 9664 \times m - 0. 9655 \times n$$

Disappearance of γ Tauri, 1849, November 29, $7^h.44^m.3^s.94 + t$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$4.35.17.55$	$''$	$+$	15.0	$\times t$
Moon's Right Ascension in arc.....	$61.58.44.10$	$+$	x	$+$	$0.6395 \times t$
Moon's N. P. D.	$74.7.8.54$	$+$	y	$-$	$0.1225 \times t$
Moon's Horizontal Equatoreal Parallax.....	$60.51.59$	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	$16.35.05$	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$62.49.3.60$	$+$	e''		
Star's N. P. D.	$74.44.27.80$	$+$	f		
Geocentric R. A. of corresponding point in arc....	$62.15.28.76$	$+$	e	$+$	$0.0866 \times t - 2.0148 \times m$
Geocentric N. P. D. of corresponding point	$74.4.2.70$	$+$	f	$+$	$0.0362 \times t - 2.4251 \times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &16.23.90 + 0.9443 \times \left\{ + e - x - 0.5529 \times t - 2.0148 \times m \right\} \\
 &\quad - 0.1882 \times \left\{ f + 0.0362 \times t - 2.4251 \times m \right\} \\
 &\quad + 0.1896 \times \left\{ y - 0.1225 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 11''.15 = + 0.9443 \times e - 0.1882 \times f - 0.9443 \times x + 0.1896 \times y - 0.5521 \times t - 1.4462 \times m - 0.9951 \times n$$

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF DISTANCE AND ANGLES OF POSITION

OF THE

COMPONENTS OF γ VIRGINIS,

AND OF THE

DIAMETERS OF PLANETS,

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE SOUTH-EAST EQUATOREAL.

1849.

RESULTS of MEASURES of DISTANCE and ANGLE of POSITION, for each Day's Observations of the COMPONENTS of γ VIRGINIS, observed at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the South-East Equatoreal.

γ VIRGINIS. $\left\{ \begin{array}{l} \text{R. A.} = 12^{\text{h}}.34^{\text{m}}. \\ \text{N. P. D.} = 90^{\circ}.37'. \end{array} \right.$

Day and Mean Solar Hour.	Observed Distance.	Method of Observation.	Number of Measures.	Observed Angle of Position.	Number of Measures.	Observer.	Remarks.
May 29. ^d ^h 10	2.90	Equal distances ...	10	174. 25 ^o	1	M	The measures pretty good.
May 31. 10	2.96	Equal distances ...	10	176. 35	1	M	
June 9. 9	2.90	Equal distances ...	10	180. 0	1	M	

MEASURES of the DIAMETERS of VENUS, JUPITER, and SATURN, made at the Royal Observatory, Greenwich, 1849, with a Double-Image Micrometer on the South-East Equatoreal.

VENUS.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from N.A.	Apparent Error of Nautical Almanac.	Approximate Angle of Position of measured part.	Observer.	Remarks.
Apr. 17. ^d ^h 0	Diameter	10	47.05	44.40	-2.65	156 ^o	M	Interrupted by clouds, but the observations are pretty good.
	Breadth of Ill. part..	8	7.03	7.73	+0.70	66		
Apr. 26. 23	Diameter	10	53.81	50.60	-3.21	154	M	Very difficult.
	Breadth of Ill. part. .	10	4.19	5.77	+1.58	64		
Apr. 30. 0	Diameter	10	56.10	53.20	-2.90	150	M	Very uncertain; the boundary of the enlightened surface is with great difficulty seen in contact with the bright limb.
	Breadth of Ill. part. .	10	4.61	4.68	+0.07	60		
May 3. 0	Diameter	10	58.14	55.00	-3.14	144	M	
	Breadth of Ill. part. .	10	2.79	3.85	+1.06	54		

JUPITER.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from Struve's Elements.	Apparent Error of Struve's Elements.	Approximate Angle of Position of measured part.	Observer.	Remarks.
Feb. 15.8 ^{d h}	Equatoreal diameter.	10	44.85	45.63	+0.78	111 ^o	M	The planet unusually steady, and the definition excellent. Correction applied for phase of equatoreal diameter = 0".01. $\epsilon = \frac{1}{17.3}$
	Polar diameter.	10	42.25	42.31	+0.06	201		
Feb. 17.7	Equatoreal diameter.	10	44.53	45.56	+1.03	111	M	The planet unsteady, and definition bad. Correction applied for phase of equatoreal diameter = 0".02. $\epsilon = \frac{1}{16.2}$ Correction applied for phase of inclined diameters = 0".01.
	Polar diameter.	10	41.79	42.24	+0.45	201		
	Inclined diameter ...	10	42.68	43.52	+0.84	241		
	Inclined trans. diam..	10	42.92	44.10	+1.18	331		
Feb. 26.8	Equatoreal diameter.	10	43.78	45.09	+1.31	111	M	Correction for phase of equatoreal diameter, applied to the observed diameter = 0".06. $\epsilon = \frac{1}{17.5}$ Correction applied for phase of inclined diameters = 0".03.
	Polar diameter.	10	41.28	41.81	+0.53	201		
	Inclined diameter ...	10	42.25	43.07	+0.82	241		
	Inclined trans. diam..	10	42.44	43.64	+1.20	331		
Feb. 27.9 $\frac{1}{2}$	Equatoreal diameter.	10	43.67	45.02	+1.35	109	M	Correction for phase of equatoreal diameter, applied to the observed diameter = 0".06. $\epsilon = \frac{1}{18.0}$ Correction applied for phase of inclined diameters = 0".03.
	Polar diameter.	10	41.25	41.75	+0.50	199		
	Inclined diameter ...	10	42.34	43.29	+0.95	244		
	Inclined trans. diam..	10	42.18	43.29	+1.11	334		
Mar. 20.7 $\frac{1}{2}$	Equatoreal diameter.	10	41.72	43.12	+1.40	109	M	Correction for phase of equatoreal diameter, applied to the observed diameter = 0".19. $\epsilon = \frac{1}{18.4}$ Correction applied for phase of inclined diameters = 0".09.
	Polar diameter.	10	39.45	39.98	+0.53	199		
	Inclined diameter ...	10	41.35	41.46	+0.11	244		
	Inclined trans. diam..	10	40.49	41.46	+0.97	334		
Mar. 21.7 $\frac{1}{2}$	Equatoreal diameter.	10	41.75	43.01	+1.26	107	M	Correction for phase applied to equatoreal diameter = 0".20. $\epsilon = \frac{1}{20.8}$ Correction for phase applied to inclined diameters = 0".09.
	Polar diameter.	10	39.74	39.88	+0.14	197		
	Inclined diameter. ...	10	40.33	41.35	+1.02	242		
	Inclined trans. diam.	10	40.58	41.35	+0.77	332		

JUPITER—continued.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from Struve's Elements.	Apparent Error of Struve's Elements.	Approximate Angle of position of measured part.	Observer.	Remarks.
Apr. 3. 7 ^{a b}	Equatoreal diameter .	10	40.92	41.49	+0.57	109°	M	The circumstances unfavourable. Cloudy.
	Polar diameter.	10	38.34	38.47	+0.13	199		Correction for phase applied to equatoreal diameter = 0".27. $\epsilon = \frac{1}{15.9}$
Apr. 7. 7 ^{1/2}	Equatoreal diameter .	10	40.49	41.00	+0.51	110	M	Correction for phase applied to equatoreal diameter = 0".29.
	Polar diameter.	10	37.92	38.02	+0.10	200		$\epsilon = \frac{1}{15.8}$
	Inclined diameter . . .	10	39.06	39.42	+0.36	245		
	Inclined trans. diam. .	10	39.06	39.42	+0.36	335		Correction for phase applied to inclined diameters = 0".13.
Apr. 11. 8	Equatoreal diameter .	10	39.59	40.51	+0.92	108	M	Correction for phase applied to equatoreal diameter = 0".30.
	Polar diameter.	10	37.37	37.56	+0.19	198		$\epsilon = \frac{1}{17.8}$
Apr. 14. 8	Equatoreal diameter .	10	39.28	40.14	+0.86	107	M	Very much interrupted by clouds: the observations not very good.
	Polar diameter.	10	37.48	37.22	-0.26	197		Correction for phase applied to equatoreal diameter = 0".31. $\epsilon = \frac{1}{21.8}$

SATURN.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Approximate Angle of Position of measured part.	Observer.	Remarks.
Jan. 26. 6 ^{1/2}	Equatoreal diameter .	10	16.45	93°	M	The night was splendid, but the position of the planet was very unfavourable.
	Polar diameter	10	14.64	3		Correction for phase applied to equatoreal diameter = 0".02.
	Inclined diameter . . .	10	15.64	48		$\epsilon = \frac{1}{9.09}$
	Inclined trans. diam. .	10	16.00	138		Correction for phase applied to inclined diameters = 0".01.



RESULTS

OF THE

ASTRONOMICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1850.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1850.)

ROYAL OBSERVATORY, GREENWICH.

C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

FOR 1850, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1850,

WITH THE ANNUAL VARIATIONS:

ALSO,

NEW CONSTANTS FOR STARS INCLUDED IN THE CATALOGUE,

NOT OBSERVED IN PRECEDING YEARS.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, JAN. 1, 1850, OF STARS
OBSERVED IN THE YEAR 1850; WITH THE ANNUAL VARIATIONS.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R.A. 1850, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
1	α Andromedæ	23	0.66	^h 0. 38.58	+3.083	6	2	61. 44. 14.67	17.70	8	0.80	15.43	-19.91
2	β Cassiopeia			0. 1.(10)		2		31. 40. 39.79		2	0.85	39.79	19.89
3	W. B. O. 80	1	0.84	0. 4. 57.55	3.063	1		104. 26. 41.54		1	0.84	41.54	20.05
4	γ Pegasi	19	0.79	0. 5. 31.00	3.082	6		75. 39. 0.87		6	0.82	0.87	20.04
5	*	1	0.78	0. 8. 1.08	3.061			101. 55.					
6	θ Andromedæ	5	0.82	0. 9. 16.13	3.111	4	1	52. 9. 5.29	4.65	5	0.90	5.16	20.03
7	*	2	0.91	0. 10. 32.82	5.612	1		1. 23. 13.32		1	0.93	13.32	20.03
8	W. B. O. 189	1	0.76	0. 11. 9.19	3.057	1		101. 46. 55.39		1	0.76	55.39	20.03
9	ι Ceti	4	0.89	0. 11. 47.12	3.060	5		99. 39. 21.51		5	0.88	21.51	19.98
10	W. B. O. 361	1	0.76	0. 21. 40.27	3.039	1		104. 23. 26.49		1	0.76	26.49	19.97
11	12 Ceti	6	0.85	0. 22. 23.15	3.063	8		94. 47. 13.24		8	0.87	13.24	19.95
12	*	1	0.90	0. 28. 10.31	3.046			98. 44.					
13	ζ Cassiopeia	4	0.89	0. 28. 38.29	3.299	6		36. 55. 45.05		6	0.70	45.05	19.91
14	ϵ Andromedæ	6	0.84	0. 30. 38.33	3.154	4	4	61. 30. 12.54	11.11	8	0.90	11.83	19.67
15	δ Andromedæ	5	0.81	0. 31. 19.11	3.187	6	3	59. 57. 38.20	38.15	9	0.85	38.18	19.76
16	α Cassiopeia	3	0.58	0. 32. 1.28	3.351	5	2	34. 17. 9.65	8.93	7	0.77	9.44	19.82
17	W. B. O. 551	1	0.69	0. 32. 23.87	3.042			98. 42.					
18	β Ceti	21	0.71	0. 36. 3.52	3.013	10		108. 48. 39.08		10	0.76	39.08	19.84
19	*	1	0.67	0. 36. 56.04	3.043	1		97. 19. 50.53		1	0.67	50.53	19.79
20	ζ Andromedæ	4	0.88	0. 39. 23.79	3.169	5	4	66. 32. 59.94	58.43	9	0.88	59.27	19.69
21	η Cassiopeia	1	0.86	0. 40. 3.12	3.564	4	3	32. 58. 52.40	52.57	7	0.93	52.47	19.27
22	δ Piscium			0. 40. (50)		1		83. 13. 56.43		1	0.79	56.43	19.73
23	*			0. 43. \pm		1		102. 34. 23.28		1	0.70	23.28	19.70
24	B. A. C. 240	4	0.89	0. 44. 31.06	11.477	4	(1)	1. 47. 2.65	(9.15)	4	0.89	2.65	19.66
25	20 Ceti			0. 45. (20)		1		91. 57. 34.71		1	0.79	34.71	19.67
26	γ Cassiopeia			0. 47. (40)		2	1	30. 5. 46.61	48.33	3	0.86	47.18	19.64
27	W. B. O. 834			0. 48. (0)		1		101. 33. 20.87		1	0.67	20.87	19.62
28	μ Andromedæ	3	0.91	0. 48. 26.46	3.301	5	2	52. 18. 54.95	55.27	7	0.88	55.04	19.68
29	2 Ursæ Minoris	1	0.91	0. 49. 8.43	6.716	2		4. 33. 1.00		2	0.94	1.00	19.59
30	ϵ Piscium	1	0.89	0. 55. 9.69	3.114	6		82. 55. 6.46		6	0.86	6.46	19.50
31	β Andromedæ	4	0.88	1. 1. 20.79	3.336	3		55. 10. 34.22		3	0.91	34.22	19.27
32	*	1	0.33	1. 4. 37.41	17.302			1. 30.					
33	Polaris	76	0.60	1. 5. 0.78	17.596	18	7	1. 29. 25.35	24.60	37	0.61	24.84	19.27
	Polaris S. P.					11	1	24.23	23.90				
34	ϕ Cassiopeia			1. 10. (40)		1	1	32. 33. 31.36	31.33	2	0.82	31.35	19.13
35	δ Cassiopeia	2	0.93	1. 16. 2.75	3.853	6	4	30. 32. 47.00	46.12	10	0.90	46.65	18.92
36	θ Ceti	24	0.75	1. 16. 31.64	3.000	8		98. 57. 32.18		8	0.62	32.18	18.75
37	A Cassiopeia			1. 20. (10)		1	1	20. 30. 35.57	37.96	2	0.97	36.77	18.76
38	*	5	0.89	1. 22. 54.13	3.088	5		87. 53. 39.26		5	0.92	39.26	18.76
39	η Piscium	5	0.90	1. 23. 27.73	3.200	3		75. 25. 43.78		3	0.88	43.78	18.76
40	χ Cassiopeia			1. 24. (10)		1	1	31. 32. 24.72	23.39	2	0.82	24.06	18.69
41	W. B. I. 452	4	0.68	1. 26. 12.18	3.086			88. 12.					
42	B. A. C. 474	1	0.90	1. 27. 18.61	+3.617			42. 3.					
43	W. B. I. 477			1. 27. (20)		3		89. 0. 43.59		3	0.60	43.59	-18.61

19. Of about the 9th magnitude.

23. Of the 12th magnitude.

38. This is a star detected by Mr. Hind in November, 1850, and suspected by him to be variable. The following are notes of its appearance as observed at Greenwich. On Nov. 8, it was noted as being of the 6.7th magnitude; on Nov. 14, it was noted of the 8th magnitude, its colour being of a pale white, and its appearance disk like, similar to one of the small planets; on Nov. 28, of the 8th magnitude, and of a white colour; on Nov. 29, of the 8th magnitude, and its colour slightly red; on Dec. 5 and 7, of the 8.9th magnitude; on Dec. 12, of the 8th magnitude, and slightly red.

41. Of the 9th magnitude.

43. Of the 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued*.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
44	51 Andromedæ.....	4	0·89	^h 1. 28. 48·44	^s +3·639	3	2	^o 42. 7. 59·83	["] 59·10	5	0·89	["] 59·54	["] -18·45
45	ν Piscium.....	5	0·86	1. 33. 37·80	3·117	4		85. 16. 24·01		4	0·87	24·01	18·38
46	54 Andromedæ.....			1. 34.(20)		1		40. 4. 10·24		1	0·93	10·24	18·35
47	*	1	0·95	1. 35. 16·53	3·165	1		80. 8. 23·33		1	0·95	23·33	18·35
48	B. A. C. 527.....	1	0·89	1. 35. 22·37	2·747			123. 5.....					
49	τ Ceti.....	2	0·86	1. 37. 5·93	2·788	2		106. 43. 44·62		2	0·43	44·62	19·15
50	ο Piscium.....	5	0·84	1. 37. 28·67	3·162	4		81. 35. 54·40		4	0·82	54·40	18·31
51	ε Sculptoris.....	1	0·02	1. 38. 37·26	2·819			115. 48.....					
52	B. A. C. 542.....	1	0·90	1. 39. 12·06	3·171			79. 55.....					
53	W. B. I. 743.....	1	0·89	1. 41. 16·17	3·161			81. 28.....					
54	γ Persei.....			1. 42.(40)		2		39. 57. 4·53		2	0·94	4·53	18·01
55	54 Ceti.....	1	0·84	1. 42. 54·57	3·171			79. 42.....					
56	ε Cassiopeiæ.....			1. 43.(40)		1	1	27. 4. 16·67	17·04	2	0·98	16·86	18·04
57	ζ Ceti.....	3	0·92	1. 44. 3·46	2·960	2		101. 4. 41·76		2	0·47	41·76	17·90
58	α Trianguli.....	3	0·95	1. 44. 32·58	3·399	1		61. 9. 15·75		1	0·91	15·75	17·80
59	β Arietis.....	5	0·89	1. 46. 21·71	3·297	7		69. 55. 38·00		7	0·77	38·00	17·82
60	50 Cassiopeiæ.....			1. 50.(40)		3	3	18. 18. 29·66	30·97	6	0·95	30·32	17·78
61	α ¹ Piscium.....	1	0·87	1. 54. 17·13	3·102	2		87. 57. 46·25		2	0·91	46·25	17·61
62	α Piscium (as one mass)	1	0·90	1. 54. 17·46	3·102			87. 58.....					
63	α ² Piscium.....	3	0·90	1. 54. 17·42	3·102	2		87. 57. 42·72		2	0·91	42·72	17·62
64	γ ¹ Andromedæ.....	5	0·62	1. 54. 42·59	3·644	4		48. 23. 34·25		4	0·48	34·25	17·56
65	γ ² Andromedæ.....	4	0·69	1. 54. 43·43	3·640	4		48. 23. 29·36		4	0·48	29·36	17·60
66	W. B. I. 986.....			1. 55.(0)		1		92. 20. 51·02		1	0·97	51·02	17·58
67	W. B. I. 988.....			1. 55.(10)		2		79. 4. 13·71		2	0·78	13·71	17·58
68	α Arietis.....	21	0·72	1. 58. 43·67	3·363	7	1	67. 14. 57·00	57·38	8	0·70	57·05	17·28
69	β Trianguli.....	5	0·92	2. 0. 37·91	3·545	3	2	55. 43. 29·46	29·11	5	0·94	29·32	17·32
70	Lalande .. { 4047 } { 4048 }	2	0·01	2. 4. 27·10	3·757	2		43. 13. 9·56		2	0·97	9·56	17·17
71	ξ ¹ Ceti.....	1	0·65	2. 5. 3·43	3·169	1		81. 51. 32·26		1	0·65	32·26	17·12
72	μ Fornacis.....	3	0·61	2. 6. 18·12	2·642			121. 26.....					
73	67 Ceti.....	5	0·93	2. 9. 30·31	2·988	4		97. 6. 56·96		4	0·94	56·96	16·82
74	Bradley 328.....	2	0·01	2. 12. 24·64	4·182			33. 18.....					
75	κ Fornacis.....			2. 15.(40)		3		114. 30. 1·41		3	0·91	1·41	16·56
76	B. A. C. 744.....			2. 16.(50)		3		23. 16. 35·80		3	0·64	35·80	16·59
77	B. A. C. 750.....			2. 18.(10)		3		80. 1. 52·30		3	0·92	52·30	16·17
78	B. A. C. 755.....	3	0·01	2. 18. 43·29	3·207	2		80. 6. 45·04		2	0·91	45·04	16·36
79	ξ ² Ceti.....	6	0·91	2. 20. 11·32	3·182	3		82. 12. 54·80		3	0·96	54·80	16·42
80	Lalande 4594.....	1	0·01	2. 21. 40·14	3·623			54. 33.....					
81	14 Trianguli.....	2	0·01	2. 22. 57·68	3·627			54. 31.....					
82	B. A. C. 784.....			2. 26.(30)		4	2	9. 11. 43·22	42·79	6	0·77	43·08	16·09
83	ν Ceti.....	1	0·80	2. 28. 0·65	3·135			85. 4.....					
84	W. B. II. 497.....	3	0·01	2. 29. 8·43	2·873	1		103. 33. 11·87		1	0·93	11·87	15·96
85	δ Ceti.....	6	0·79	2. 31. 47·89	3·074	5		90. 19. 17·11		5	0·76	17·11	15·78
86	B. A. C. 817.....	3	0·61	2. 32. 21·44	+3·158			84. 32.....					
87	θ Persei.....			2. 34.(0)		2		41. 24. 35·14		2	0·97	35·14	15·60
88	B. A. C. 830.....			2. 34.(20)		3		79. 54. 2·39		3	0·62	2·39	-15·61

53. Of the 7·8th magnitude.

74. See the note to this star in the Twelve-Year Catalogue, No. 207.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
89	35 Arietis	2	0.49	2. 34. 39.67	+3.499	1	1	62. 56. 4.01	5.61	2	0.91	4.81	-15.68
90	γ Ceti	12	0.72	2. 35. 31.97	3.100	4		87. 23. 57.45		4	0.71	57.45	15.44
91	36 Arietis	1	0.01	2. 35. 57.29	3.337			72. 52.					
92	π Ceti	2	0.92	2. 36. 59.19	2.851	2		104. 29. 48.41		2	0.47	48.41	15.51
93	B. A. C. 857			2. 38. (10)		1		33. 35. 54.11		1	0.96	54.11	15.46
94	B. A. C. 858			2. 38. (30)		1		33. 32. 45.29		1	0.96	45.29	15.45
95	η ¹ Persei	1	0.96	2. 39. 44.35	4.309			34. 44.					
96	η ² Persei	4	0.82	2. 39. 47.36	4.312	2		34. 43. 52.67		2	0.49	52.67	15.38
97	41 Arietis	5	0.93	2. 41. 9.88	3.510	3	2	63. 21. 41.13	41.25	5	0.94	41.18	15.20
98	B. A. C. 896	2	0.91	2. 46. 23.48	7.560			11. 11.					
99	η Eridani	5	0.57	2. 49. 6.14	2.928	5		99. 29. 53.76		5	0.94	53.76	14.62
100	γ Persei	1	0.97	2. 53. 57.66	4.296	2		37. 5. 6.38		2	0.95	6.38	14.55
101	{ Lalande 5612... }	1	0.96	2. 54. 1.24	2.712			111. 17.					
	* (c ₂₈)												
102	α Ceti	11	0.62	2. 54. 26.57	3.127	5		86. 30. 6.78		5	0.57	6.78	14.41
103	ρ Persei			2. 55. (30)		1	1	51. 44. 46.01	46.03	2	0.96	46.02	14.37
104	τ ³ Eridani	1	0.96	2. 55. 46.95	2.643	3		114. 12. 53.53		3	0.93	53.53	14.36
105	{ Lalande 5706... }	3	0.62	2. 57. 0.44	2.695			111. 57.					
	* (c ₂₇)												
106	Lalande 5728	3	0.62	2. 57. 50.74	2.693	1		111. 59. 47.86		1	0.93	47.86	14.31
107	β Persei	5	0.96	2. 58. 25.49	3.871	3	1	49. 37. 35.05	33.62	4	0.97	34.69	14.30
108	*	1	0.96	3. 1. 4.34	2.667			113. 3.					
109	W. B. III. 23	1	0.01	3. 2. 25.60	2.896			100. 9.					
110	*			3. 2. (40)		1		75. 26. 19.47		1	0.93	19.47	14.02
111	δ Arietis	5	0.95	3. 3. 3.54	3.418	4		70. 50. 38.48		4	0.96	38.48	14.00
112	12 Eridani	2	0.47	3. 5. 42.11	2.550	3		119. 34. 50.79		3	0.93	50.79	14.46
113	B. A. C. 1010			3. 8. (10)		1		99. 19. 43.70		1	0.96	43.70	13.57
114	ζ Eridani	6	0.48	3. 8. 32.99	2.910	6		99. 22. 48.83		6	0.65	48.83	13.66
115	15 Eridani	2	0.01	3. 11. 44.39	2.651	3		113. 3. 43.31		3	0.67	43.31	13.44
116	τ ⁴ Eridani	3	0.95	3. 12. 50.97	2.665	1		112. 18. 24.75		1	0.93	24.75	13.41
117	α Persei	7	0.70	3. 13. 38.20	4.239	9		40. 40. 38.64		9	0.57	38.64	13.26
118	ο Tauri	5	0.92	3. 16. 44.77	3.222	2		81. 30. 9.93		2	0.94	9.93	13.05
119	B. A. C. 1058	1	0.99	3. 16. 57.62	4.789	2		30. 35. 17.40		2	0.47	17.40	13.13
120	B. A. C. 1061	4	0.60	3. 17. 56.17	18.209	1		3. 50. 24.67		1	0.97	24.67	13.04
121	B. A. C. 1062			3. 18. (0)		2		31. 38. 49.52		2	0.05	49.52	13.06
122	ξ Tauri	6	0.74	3. 19. 2.64	3.243	5		80. 47. 38.26		5	0.72	38.26	12.92
123	ε Eridani	5	0.95	3. 25. 51.98	2.826	7		99. 58. 9.64		7	0.56	9.64	12.43
124	τ ⁶ Eridani	3	0.94	3. 27. 9.82	2.643	3		112. 8. 19.70		3	0.35	19.70	12.38
125	B. A. C. 1111	2	0.09	3. 29. 11.29	5.117			27. 17.					
126	δ Persei	6	0.81	3. 32. 15.86	4.235	6	1	42. 41. 50.43	48.55	7	0.70	50.16	12.02
127	ο Persei			3. 35. (0)		3		58. 11. 29.00		3	0.67	29.00	11.89
128	17 Tauri	3	0.90	3. 35. 58.64	3.548			66. 22.					
129	δ Eridani			3. 36. (0)		1		100. 16. 28.69		1	0.95	28.69	12.51
130	B. A. C. 1152	3	0.38	3. 36. 24.10	2.864			100. 58.					
131	24 Tauri			3. 38. (30)		5		66. 21. 7.37		5	0.59	7.37	11.50
132	η Tauri	15	0.50	3. 38. 34.54	+3.552	8		66. 21. 46.54		8	0.62	46.54	-11.55

108. Of the 11th magnitude.

130. Of the 6th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				1850, Jan. 1.			T. D.	T. R.	T. D.	T. R.				
133	ϵ Tauri.....	2	0.52	^h 3. 40. ^m 3. ^s 14		+3.279	2		⁰ 79. 19. ¹ 19. ² 65	" "	2	0.52	19.65	-11.45
134	ζ Persei.....	4	0.97	3. 44. 42.75		3.755	6	2	58. 33. 59.05	59.73	8	0.74	59.22	11.14
135	B. A. C. 1211.....	2	0.09	3. 45. 13.46		9.565			9. 44.					
136	B. A. C. 1229.....			3. 49. (30)			1		104. 2. 15.36		1	0.95	15.36	10.84
137	γ Eridani.....	11	0.54	3. 51. 2.03		2.796	7		103. 56. 18.83		7	0.59	18.83	10.60
138	λ Tauri.....	2	0.33	3. 52. 22.41		3.315	1		77. 56. 16.02		1	0.96	16.02	10.61
139	A ¹ Tauri.....	1	0.10	3. 55. 50.05		3.534			68. 20.					
140	A ² Tauri.....	2	0.09	3. 56. 27.89		3.541			68. 24.					
141	*	1	0.96	4. 0. 26.64		3.363			75. 52.					
142	B. A. C. 1275.....			4. 0. (40)			2		77. 0. 9.29		2	0.09	9.29	9.94
143	W. B. IV. 30.....	2	0.10	4. 2. 34.27		3.357			76. 7.					
144	W. B. IV. 53.....	2	0.55	4. 3. 44.88		3.374			75. 27.					
145	δ^1 Eridani.....	1	0.96	4. 4. 32.80		2.922	1		97. 13. 55.88		1	0.96	55.88	9.74
146	B. A. C. 1300.....	3	0.38	4. 6. 36.51		5.554			25. 14.					
147	δ^2 Eridani.....	2	0.98	4. 8. 21.90		2.763	1		97. 53. 24.70		1	0.96	24.70	5.94
148	γ Tauri.....	3	0.86	4. 11. 15.78		3.407	1		74. 44. 20.28		1	0.96	20.28	9.14
149	ν^4 Eridani.....			4. 12. (10)			1		124. 10. 0.09		1	0.10	0.09	9.07
150	δ^3 Tauri.....			4. 16. (50)			3		72. 25. 11.44		3	0.04	11.44	8.74
151	ϵ Tauri.....	7	0.55	4. 19. 51.83		3.494			71. 9.					
152	θ^1 Tauri.....	3	0.10	4. 20. 0.70		3.413	4		74. 22. 31.66		4	0.07	31.66	8.47
153	θ^2 Tauri.....	3	0.10	4. 20. 6.21		3.420	5		74. 27. 58.74		5	0.08	58.74	8.46
154	80 Tauri.....	1	0.10	4. 21. 35.75		3.411			74. 42.					
155	B. A. C. 1391.....	2	0.53	4. 21. 58.84		3.427	4		74. 8. 11.98		4	0.09	11.98	8.31
156	81 Tauri.....	1	0.10	4. 22. 5.83		3.418			74. 38.					
157	B. A. C. 1394.....	2	0.53	4. 22. 12.11		3.424	4		74. 10. 51.24		4	0.09	51.24	8.30
158	Lalande 8553.....	2	0.10	4. 25. 11.83		4.386			42. 57.					
159	Lalande 8555.....	2	0.10	4. 25. 13.62		4.386			42. 56.					
160	Aldebaran.....	14	0.34	4. 27. 19.15		3.433	9		73. 47. 49.73		9	0.33	49.73	7.72
161	*			4. 28. (10)			2		74. 26. 27.87		2	0.11	27.87	7.82
162	B. A. C. 1428.....	3	0.11	4. 28. 44.41		7.942			14. 21.					
163	ν^7 Eridani.....			4. 29. (40)			2		120. 52. 20.46		2	0.01	20.46	7.67
164	53 Eridani.....	2	0.11	4. 31. 18.91		2.746	2		104. 36. 5.35		2	0.09	5.35	7.41
165	ϵ^2 Tauri.....	1	0.06	4. 31. 42.58		3.336	2		78. 6. 5.43		2	0.08	5.43	7.57
166	B. A. C. 1446.....			4. 32. (30)			1		104. 39. 12.82		1	0.11	12.82	7.33
167	B. A. C. 1448.....			4. 32. (30)			2		9. 4. 15.45		2	0.01	15.45	7.47
168	τ Tauri.....	1	0.99	4. 33. 14.76		3.592			67. 20.					
169	54 Eridani.....	3	0.09	4. 33. 52.99		2.623	3		109. 57. 48.96		3	0.12	48.96	7.25
170	9 Camelopardali (α).....	1	0.99	4. 39. 9.10		5.906			23. 55.					
171	π^1 Orionis.....	2	0.08	4. 41. 42.03		3.258	4		83. 18. 19.97		4	0.06	19.97	6.71
172	π^2 Orionis.....			4. 42. (30)			4		81. 21. 41.32		4	0.07	41.32	6.63
173	π^3 Orionis.....	4	0.32	4. 43. 13.24		3.194	5		84. 39. 20.67		5	0.10	20.67	6.56
174	ι Aurigæ.....	1	0.99	4. 47. 13.80		3.895			57. 5.					
175	W. B. IV. 1081.....	1	0.01	4. 49. 13.08		3.381			76. 18.					
176	W. B. IV. 1086.....	3	0.08	4. 49. 20.43		3.383			76. 14.					
177	W. B. IV. 1096.....	3	0.07	4. 49. 50.73		3.382			76. 17.					
178	ϵ Aurigæ.....	3	0.40	4. 51. 12.83		+4.291	3		46. 24. 15.56		3	0.12	15.56	-5.93

141. Of the 11th magnitude.

143. Of the 9th magnitude.

157. This star is a magnitude and a half smaller than No. 155. The N. P. D. differs 13" from the B. A. C. In this instance, the proper motion given in the B. A. C. in N. P. D. is not combined with the geometrical precession in forming the Annual Variation.

168. A small star of the 9th magnitude precedes this.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
179	ζ Aurigæ.....	1	0·13	4. 52. 0·15	+4·181	2		49. 8. 57·00	"	2	0·12	57·00	- 5·86
180	ι Tauri.....	1	0·06	4. 54. 8·08	3·581	1		68. 37. 46·69		1	0·06	46·69	5·65
181	W. B. IV. 1218.....	2	0·01	4. 54. 39·22	3·379	1		76. 29. 18·45		1	0·13	18·45	5·64
182	W. B. IV. 1312.....			4. 58.(10)		2		76. 7. 2·37		2	0·05	2·37	5·35
183	ε Leporis.....	1	0·99	4. 59. 6·72	2·538	3		112. 34. 34·55		3	0·07	34·55	5·22
184	β Eridani.....	3	0·12	5. 0. 28·73	2·948	2		95. 17. 5·63		2	0·13	5·63	5·07
185	W. B. V. 11.....			5. 1.(50)		2		76. 11. 54·31		2	0·01	54·31	5·04
186	W. B. V. 12.....			5. 1.(50)		2		76. 12. 20·57		2	0·01	20·57	5·04
187	λ Eridani.....			5. 2.(0)		1		98. 57. 3·70		1	0·14	3·70	5·00
188	W. B. V. 48.....			5. 3.(30)		1		75. 49. 30·69		1	0·08	30·69	4·90
189	W. B. V. 54.....			5. 3.(50)		3		76. 15. 41·09		3	0·11	41·09	4·87
190	Capella.....	10	0·37	5. 5. 37·10	4·419	11		44. 9. 39·32		11	0·37	39·32	4·28
191	B. A. C. 1618.....			5. 6.(20)		2		98. 19. 42·44		2	0·01	42·44	4·61
192	Rigel.....	16	0·32	5. 7. 19·90	2·880	11		98. 22. 44·30		11	0·22	44·30	4·56
193	*			5. 7.(20)		2		98. 22. 52·73		2	0·06	52·73	4·56
194	τ Orionis.....	1	0·14	5. 10. 19·52	2·916	1		97. 0. 39·58		1	0·14	39·58	4·28
195	16 Camelopardali...	2	0·12	5. 10. 37·86	5·107			32. 37.....					
196	B. A. C. 1661.....	1	0·13	5. 14. 12·57	3·149			86. 35.....					
197	B. A. C. 1662.....	2	0·55	5. 14. 27·10	18·363			4. 54.....					
198	m Orionis.....	1	0·14	5. 14. 57·23	3·152	3		86. 36. 18·20		3	0·13	18·20	3·91
199	W. B. V. 343.....			5. 15.(0)		1		86. 35. 51·33		1	0·17	51·33	3·91
200	Lalande 10096.....	2	0·10	5. 15. 35·66	3·478			72. 46.....					
201	111 Tauri.....	3	0·10	5. 15. 40·48	3·498	3		72. 45. 39·84		3	0·12	39·84	3·90
202	β Tauri.....	13	0·29	5. 16. 48·82	3·789	4		61. 31. 30·70		4	0·29	30·70	3·56
203	* (r ₅).....	3	0·01	5. 17. 47·86	3·725	3		63. 33. 4·13		3	0·01	4·13	3·67
204	117 Tauri.....	3	0·10	5. 19. 19·35	3·483	3		72. 53. 27·38		3	0·10	27·38	3·49
205	β Leporis.....	2	0·15	5. 21. 49·24	2·572	2		110. 52. 58·10		2	0·10	58·10	3·25
206	119 Tauri.....	1	0·10	5. 23. 25·17	3·516			71. 31.....					
207	W. B. V. 603.....			5. 24.(20)		1		90. 24. 0·44		1	0·17	0·44	3·11
208	δ Orionis.....	11	0·17	5. 24. 20·72	3·066	8		90. 24. 53·17		8	0·10	53·17	3·07
209	120 Tauri.....	1	0·10	5. 24. 44·30	3·518			71. 34.....					
210	α Leporis.....	3	0·15	5. 26. 6·98	2·648	4		107. 56. 1·54		4	0·12	1·54	2·96
211	ι Orionis.....			5. 28.(10)		1		96. 0. 45·62		1	0·17	45·62	2·77
212	*			5. 28.(30)		1		96. 0. 54·20		1	0·17	54·20	2·66
213	ε Orionis.....	13	0·20	5. 28. 36·23	3·044	7		91. 18. 8·35		7	0·14	8·35	2·73
214	125 Tauri.....	1	0·12	5. 30. 26·63	3·718			64. 12.....					
215	σ Orionis.....	3	0·15	5. 31. 13·04	3·010	3		92. 41. 27·21		3	0·12	27·21	2·50
216	ζ Orionis.....	3	0·17	5. 33. 11·51	3·030	4		92. 1. 36·54		4	0·14	36·54	2·33
217	α Columbæ.....	3	0·13	5. 34. 13·03	2·177	1		124. 9. 18·55		1	0·10	18·55	2·25
218	B. A. C. 1822.....			5. 38.(10)		1		112. 28. 31·29		1	0·10	31·29	1·91
219	γ Leporis.....	2	0·16	5. 38. 12·72	2·500	3		112. 30. 3·97		3	0·12	3·97	1·55
220	130 Tauri.....			5. 38.(40)		3		72. 19. 55·39		3	0·15	55·39	1·86
221	W. B. V. 1015.....			5. 39.(50)		1		82. 5. 56·99		1	0·11	56·99	1·76
222	κ Orionis.....	4	0·16	5. 40. 38·62	2·846	1		99. 43. 38·92		1	0·08	38·92	1·66
223	137 Tauri.....	2	0·09	5. 43. 51·18	+3·410			75. 52.....					
224	Lalande 11095.....			5. 44.(20)		1		64. 58. 0·26		1	0·14	0·26	- 1·37

196. This star differs 1^s in R. A. from the B. A. C.: the proper motion in R. A. of the B. A. C. is not in this instance combined with the geometrical precession in forming the Annual Variation.

203. Of the 10th magnitude.

213. Of the 9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
225	χ^1 Orionis			^h 5. 45. (30)		2		^o 69. 45. 25.96	"	2	0.11	25.96	— 1.17
226	B. A. C. 1879	3	0.62	5. 45. 45.95	+ 26.626			3. 15.					
227	α Orionis	18	0.28	5. 47. 3.12	3.247	13		82. 37. 34.40		13	0.38	34.40	1.13
228	δ Aurigæ			5. 47. (10)		2		35. 44. 2.12		2	0.12	2.12	1.01
229	*	1	0.11	5. 47. 54.86	4.085			52. 47.					
230	β Aurigæ	1	0.16	5. 48. 31.48	4.404	2		45. 4. 26.68		2	0.12	26.68	0.97
231	θ Aurigæ	2	0.13	5. 49. 29.51	4.092			52. 48.					
232	η Leporis	2	0.19	5. 49. 34.49	2.735	1		104. 12. 0.24		1	0.12	0.24	1.06
233	Lalande 11509			5. 56. (50)		3		66. 28. 47.84		3	0.14	47.84	— 0.28
234	3 Geminorum			6. 0. (40)		1		66. 52. 1.10		1	0.10	1.10	+ 0.07
235	* (r_1)	2	0.18	6. 11. 35.58	3.716	1		64. 14. 15.26		1	0.17	15.26	1.01
236	μ Geminorum	12	0.32	6. 13. 53.15	3.636	8		67. 24. 52.75		8	0.16	52.75	1.35
237	β Canis Majoris . . .			6. 16. (10)		3		107. 53. 7.93		3	0.10	7.93	1.41
238	Lalande 12237	3	0.20	6. 16. 50.64	3.709	1		64. 24. 38.00		1	0.17	38.00	1.47
239	Lalande 12240	2	0.19	6. 16. 58.03	3.712			64. 19.					
240	B. A. C. 2083			6. 19. (0)		5		16. 12. 0.21		5	0.17	0.21	1.66
241	Lalande 12489	3	0.20	6. 23. 52.10	3.939			56. 52.					
242	Piazzi VI. 157.	3	0.16	6. 27. 11.98	3.466	1		73. 26. 17.97		1	0.14	17.97	2.37
243	Cephei 51 (Hev.) . . .					1		2. 44. 39.33					
243	Cephei 51 (Hev.) S. P.	7	0.33	6. 28. 33.09	30.715	5	1	37.04	38.79	7	0.56	37.62	2.60
244	γ Geminorum	1	0.14	6. 29. 2.74	3.469			73. 29.					
245	Lalande 12828			6. 33. (50)		2		45. 21. 5.56		2	0.11	5.56	2.95
246	42 Camelopardali . .			6. 35. (20)		5		22. 16. 20.09		5	0.17	20.09	3.07
247	B. A. C. 2210	3	0.11	6. 38. 6.94	8.868			12. 51.					
248	Sirius	21	0.32	6. 38. 32.33	2.645	25		106. 30. 50.23		25	0.31	50.23	4.59
249	Lalande 13136			6. 42. (20)		2		56. 2. 6.72		2	0.11	6.72	3.68
250	κ Canis Majoris . . .	2	0.19	6. 44. 14.35	2.242			122. 20.					
251	ϵ^1 Canis Majoris . . .	1	0.20	6. 47. 54.48	2.492	3		114. 0. 1.22		3	0.17	1.22	4.15
252	ϵ Canis Majoris . . .	3	0.11	6. 52. 43.96	2.360	4		118. 46. 19.00		4	0.15	19.00	4.57
253	*	1	0.16	6. 53. 8.21	3.708			63. 56.					
254	B. A. C. 2300 (1st star)	1	0.19	6. 53. 43.44	4.795			37. 1.					
255	B. A. C. 2300 (as one mass)	2	0.19	6. 53. 43.45	4.795			37. 1.					
256	B. A. C. 2300 (2nd star)	1	0.19	6. 53. 43.67	4.795			37. 1.					
257	ϵ^2 Canis Majoris . . .	1	0.21	6. 56. 45.44	2.507			113. 37.					
258	γ Canis Majoris . . .	1	0.18	6. 56. 58.31	2.718	2		105. 24. 53.95		2	0.18	53.95	4.96
259	*	2	0.17	7. 1. 50.04	3.529			70. 26.					
260	*	2	0.17	7. 1. 51.40	3.529			70. 26.					
261	δ Canis Majoris . . .			7. 2. (20)		4		116. 9. 30.16		4	0.17	30.16	5.36
262	18 Lynceis			7. 2. (50)		3		30. 6. 10.67		3	0.18	10.67	5.76
263	*	2	0.11	7. 3. 4.55	3.528			70. 26.					
264	δ Geminorum	21	0.18	7. 11. 9.64	3.597	17		67. 44. 46.47		17	0.20	46.47	6.14
265	π Argûs	1	0.20	7. 11. 50.69	2.141			126. 50.					
266	B. A. C. 2439			7. 15. (10)		1		21. 14. 11.61		1	0.20	11.61	6.53
267	β Canis Minoris . . .	5	0.16	7. 19. 0.92	3.261	6		81. 24. 46.07		6	0.17	46.07	6.83
268	Lalande 14458			7. 19. (20)		2		57. 42. 48.12		2	0.14	48.12	6.80
269	α^1 Geminorum	2	0.16	7. 25. 0.92	+ 3.856	10		57. 47. 18.50		10	0.16	18.50	+ 7.27

226. The proper motion in R. A. given in the B. A. C. is not combined with the geometrical precession in forming the Annual Variation.

229. Of about the 9th or 10th magnitude. This star is identical with No. 513 of the Greenwich Twelve-Year Catalogue.

253. Of the 8th magnitude. This star is No. 615 of the Twelve-Year Catalogue.

254, 255, 256. No proper motion in R. A. is applied to the precession.

263. Of about the 9th or 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
270	Castor.	24	0.28	^h 7. 25. ^m 1.28	+3.842	16		^s 57. 47. 16.57	"	16	0.17	16.57	+ 7.35
271	Procyon.	30	0.30	7. 31. 26.91	3.146	18		84. 23. 39.90		18	0.24	39.90	8.84
272	κ Geminorum.	2	0.14	7. 35. 23.16	3.634	1		65. 14. 49.81		1	0.15	49.81	8.16
273	Pollux.	31	0.33	7. 36. 7.82	3.683	14		61. 36. 58.35		14	0.22	58.35	8.23
274	{ 3 Puppis. }			7. 37. (50)		3		118. 35. 56.19		3	0.15	56.19	8.27
	{ τ Navis. }												
275	B. A. C. 2596.			7. 42. (10)		3		15. 41. 27.55		3	0.18	27.55	8.64
276	26 Lynceis.			7. 43. (50)		2		42. 3. 9.24		2	0.20	9.24	8.81
277	* (q ₂).	3	0.17	7. 51. 57.06	4.647	2		36. 49. 52.07		2	0.17	52.07	9.41
278	Lalande 15595.	2	0.15	7. 52. 3.30	3.506			69. 47.					
279	Lalande 15646.	2	0.17	7. 53. 20.49	3.503			69. 51.					
280	27 Lynceis.	4	0.14	7. 57. 8.87	4.556	3		38. 4. 0.16		3	0.17	0.16	9.82
281	15 Argus.	8	0.18	8. 1. 9.46	2.558	5		113. 52. 29.23		5	0.17	29.23	10.04
282	ψ ² Caneri.	3	0.18	8. 1. 24.65	3.630	3		64. 2. 30.62		3	0.17	30.62	10.47
283	τ Puppis.	1	0.20	8. 7. 49.96	2.268			125. 27.					
284	β Caneri.	5	0.18	8. 8. 22.61	3.263			80. 21.					
285	*			8. 8. (40)		1		89. 45. 7.14		1	0.14	7.14	10.68
286	W. B. VIII. 217.			8. 8. (50)		1		89. 48. 21.02		1	0.14	21.02	10.69
287	B. A. C. 2787. S. P. .	5	0.73	8. 11. 13.63	17.565	2		4. 25. 56.22		2	0.73	56.22	10.88
288	q Puppis.	1	0.20	8. 12. 56.73	2.244			126. 12.					
289	Groombridge 1452. .			8. 28. (50)		1		9. 27. 13.10		1	0.16	13.10	12.13
290	δ Hydræ.	5	0.19	8. 29. 42.77	3.184			83. 47.					
291	ε Hydræ.	8	0.20	8. 38. 49.81	3.189	8		83. 2. 4.53		8	0.21	4.53	12.84
292	ρ ³ Caneri.	3	0.17	8. 46. 39.98	3.612			61. 30.					
293	ζ Hydræ.	4	0.23	8. 47. 27.77	3.184	2		83. 29. 12.98		2	0.23	12.98	13.38
294	B. A. C. 3042. S. P. .	7	0.76	8. 48. 24.19	9.646	2		8. 34. 47.03		2	0.73	47.03	13.45
295	ι Ursæ Majoris.	5	0.20	8. 48. 54.71	4.149	5		41. 22. 23.83		5	0.20	23.83	13.77
296	{ 10 Ursæ Majoris. }	5	0.22	8. 50. 52.94	3.931	3		47. 37. 37.08		3	0.24	37.08	13.89
	{ B. A. C. 3059. }												
297	κ Ursæ Majoris.	5	0.20	8. 53. 21.58	4.140	3		42. 15. 15.09		3	0.24	15.09	13.88
298	κ Caneri.	1	0.97	8. 59. 37.10	3.262	1		78. 43. 53.33		1	0.97	53.33	14.13
299	38 Lynceis.	5	0.20	9. 9. 29.63	3.763	3		52. 33. 57.43		3	0.23	57.43	14.80
300	B. A. C. 3199.	4	0.77	9. 15. 15.15	9.258			8. 1.					
301	h Ursæ Majoris.			9. 19. (40)		3		26. 17. 12.25		3	0.25	12.25	15.30
302	α Hydræ.	10	0.36	9. 20. 12.94	2.948	8		98. 0. 40.34		8	0.36	40.34	15.33
303	θ Ursæ Majoris.	7	0.29	9. 22. 47.63	4.062	7		37. 38. 31.27		7	0.26	31.27	16.09
304	ξ Leonis.	2	0.90	9. 23. 51.36	3.245			78. 2.					
305	W. B. IX. 611.			9. 27. (30)		2		84. 41. 53.92		2	0.25	53.92	15.78
306	ο Leonis.	5	0.24	9. 33. 8.54	3.228	6		79. 25. 40.18		6	0.25	40.18	16.13
307	ε Leonis.	7	0.42	9. 37. 19.66	3.425	8		65. 32. 15.26		8	0.27	15.26	16.33
308	υ Ursæ Majoris.	2	0.28	9. 40. 16.70	4.353	6		30. 15. 33.67		6	0.26	33.67	16.63
309	π Leonis.	1	0.23	9. 52. 17.01	3.182			81. 14.					
310	W. B. IX. 1296.			10. 0. (10)		2		77. 16. 19.88		2	0.25	19.88	17.38
311	Regulus.	16	0.44	10. 0. 22.73	3.203	14		77. 18. 5.66		14	0.31	5.66	17.37
312	B. A. C. 3485.	3	0.23	10. 6. 13.95	3.314			68. 5.					
313	B. A. C. 3495. S. P. .	9	0.78	10. 6. 58.32	+10.207	5		4. 59. 28.94		5	0.78	28.94	+17.73

277. Of the 8th magnitude.

279. Of the 7.8th magnitude.
286. Of the 7.8th magnitude.285. Of the 9.10th magnitude.
313. This is a double star.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				1850, Jan. 1.			T. D.	T. R.	T. D.	T. R.				
314	Groombridge 1626..	1	0.26	^h 10. ^m 7. ^s 7.70	^s +3.672				^h 46. ^m 27. ^s	"		"	"	"
315	λ Ursæ Majoris	5	0.26	10. 8. 1.79	3.659	5			46. 20. 18.70		5	0.28	18.70	+17.77
316	Groombridge 1635..	2	0.23	10. 9. 28.88	3.666				46. 12.					
317	B. A. C. 3528. S. P..	4	0.80	10. 12. 17.24	8.132	6			6. 40. 58.78		6	0.77	58.78	17.95
318	μ Ursæ Majoris	4	0.27	10. 13. 22.37	3.615	8			47. 44. 53.32		8	0.27	53.32	17.89
319	24 Sextantis.....	3	0.23	10. 15. 47.57	3.078				90. 9.					
320	W. B. X. 290.....			10. 17. (10)		2			90. 1. 53.17		2	0.25	53.17	18.07
321	μ Hydræ	4	0.27	10. 18. 50.26	2.900	6			106. 4. 20.36		6	0.26	20.36	18.25
322	35 Ursæ Majoris S. P.			10. 19. (10)		5			23. 36. 30.34		5	0.78	30.34	18.17
323	ρ Leonis	2	0.53	10. 24. 54.50	3.171	1			79. 55. 22.73		1	0.90	22.73	18.39
324	B. A. C. 3677.....	2	0.24	10. 35. 46.50	2.763	1			121. 55. 48.23		1	0.18	48.23	18.74
325	ν Hydræ.....	4	0.28	10. 42. 13.65	2.954	8			105. 24. 35.24		8	0.26	35.24	18.74
326	α Crateris.....	6	0.28	10. 52. 28.25	2.919	5			107. 30. 3.95		5	0.26	3.95	19.05
327	β Ursæ Majoris	3	0.26	10. 52. 45.33	3.685	7			32. 48. 53.62		7	0.29	53.62	19.17
328	α Ursæ Majoris	16	0.43	10. 54. 25.62	3.780	12			27. 26. 25.44		12	0.40	25.44	19.33
329	χ Leonis.....	2	0.23	10. 57. 16.63	3.103	1			81. 51. 14.61		1	0.30	14.61	19.39
330	ψ Ursæ Majoris	5	0.21	11. 1. 12.58	3.411	3			44. 41. 19.20		3	0.24	19.20	19.49
331	β Crateris.....	5	0.23	11. 4. 17.20	2.947	4			112. 0. 28.00		4	0.26	28.00	19.57
332	δ Leonis	19	0.36	11. 6. 7.46	3.207	6			68. 39. 18.65		6	0.28	18.65	19.64
333	B. A. C. 3836.....	2	0.32	11. 6. 11.15	3.087	3			86. 54. 51.20		3	0.31	51.20	19.51
334	θ Leonis.....	2	0.32	11. 6. 21.91	3.161	2			73. 45. 3.29		2	0.26	3.29	19.54
335	Rumker 3507			11. 10. (10)		2			27. 0. 0.60		2	0.33	0.60	19.58
336	ξ ¹ Ursæ Majoris....	2	0.32	11. 10. 10.10	3.223				57. 38.					
337	ξ ² Ursæ Majoris....	2	0.32	11. 10. 10.37	3.253				57. 38.					
338	ν Ursæ Majoris	1	0.32	11. 10. 21.86	3.268	2			56. 5. 16.58		2	0.35	16.58	19.55
339	δ Crateris.....	14	0.25	11. 11. 50.69	2.995	9			103. 58. 3.39		9	0.28	3.39	19.41
340	σ Leonis	1	0.23	11. 13. 24.04	3.099				83. 9.					
341	ι Leonis	5	0.31	11. 16. 6.18	3.137	4			78. 38. 42.69		4	0.32	42.69	19.75
342	γ Crateris.....	4	0.32	11. 17. 23.62	2.990	2			106. 51. 38.64		2	0.32	38.64	19.67
343	83 Leonis.....	6	0.31	11. 19. 9.67	3.036	4			86. 10. 10.88		4	0.32	10.88	19.58
344	Piazzi XI. 71.....	5	0.31	11. 19. 10.82	3.086	4			86. 10. 36.55		4	0.31	36.55	19.74
345	τ Leonis	1	0.23	11. 20. 13.38	3.091	2			86. 19. 6.30		2	0.31	6.30	19.78
346	W. B. XI. 349.....			11. 20. (20)		2			86. 20. 39.44		2	0.31	39.44	19.75
347	λ Draconis.....	5	0.32	11. 22. 26.45	3.671	3			19. 50. 28.25		3	0.35	28.25	19.87
348	B. A. C. 3928.....	3	0.32	11. 25. 38.00	2.941	5			121. 1. 40.88		5	0.31	40.88	19.86
349	θ Crateris.....	5	0.31	11. 29. 4.57	3.043	7			98. 58. 24.40		7	0.31	24.40	19.86
350	ζ Crateris	4	0.32	11. 37. 9.96	3.033	4			107. 31. 1.66		4	0.30	1.66	19.97
351	χ Ursæ Majoris	1	0.33	11. 38. 6.34	3.209	2			41. 23. 20.62		2	0.32	20.62	19.94
352	ν Virginis.....	1	0.38	11. 38. 8.88	3.093	1			82. 37. 50.02		1	0.38	50.02	20.16
353	93 Leonis.....			11. 40. (10)		4			68. 56. 50.29		4	0.30	50.29	19.98
354	β Leonis.....	19	0.36	11. 41. 24.33	3.066	4			74. 35. 21.52		4	0.36	21.52	20.08
355	β Virginis.....	2	0.34	11. 42. 52.89	3.128	2			87. 23. 24.28		2	0.34	24.28	20.28
356	{ B. A. C. 4010..... } { Groombridge 1830 }	3	0.33	11. 44. 19.13	3.488	4			51. 12. 22.08		4	0.32	22.08	25.71
357	28 Crateris.....	1	0.32	11. 45. 20.52	3.014				123. 4.					
358	γ Ursæ Majoris	11	0.56	11. 45. 55.07	+3.198	7			35. 28. 16.61		7	0.49	16.61	+20.02

333. The N. P. D. of this star given in the B. A. C. on the authority of Lalande, appears to be 1' in error.

335. Of the 7.8th magnitude.

336, 337. A close double star, the components being of the 5th and 5.6th magnitude respectively.

343. Of the 7th magnitude.

344. Of the 8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
359	Lalande 22547.....	2	0.34	^h 11. ^m 51. ^s 0.65	+3.113	5		^o 51. ['] 17. ["] 20.22	["]	5	0.31	20.22	+20.04
360	Lalande 22608.....			11. 53.(50)		3		46. 7. 20.53		3	0.32	20.53	20.05
361	67 Ursæ Majoris...			11. 54.(30)		3		46. 7. 19.20		3	0.32	19.20	20.03
362	B. A. C. 4070. S. P..	3	0.89	11. 57. 4.19	3.340	3		3. 34. 53.04		3	0.81	53.04	20.05
363	o Virginis.....	1	0.41	11. 57. 34.02	3.064			80. 26.					
364	ε Corvi.....	6	0.36	12. 2. 25.02	3.077	4		111. 47. 6.83		4	0.33	6.83	20.03
365	γ Corvi.....	6	0.37	12. 8. 5.85	3.077	7		106. 42. 31.85		7	0.33	31.85	20.02
366	η Virginis.....	3	0.33	12. 12. 13.97	3.067	1		89. 49. 57.03		1	0.38	57.03	20.07
367	B. A. C. 4150.....	3	0.85	12. 12. 25.18	+1.876	3		2. 43. 48.32		3	0.31	48.32	20.11
368	Groombridge 1867..			12. 12.(40)		5		51. 15. 52.47		5	0.33	52.47	20.02
369	B. A. C. 4165.....	3	0.88	12. 14. 23.42	-0.408			1. 28.					
370	κ ¹ Centauri.....	1	0.32	12. 15. 42.76	+3.117			124. 35.					
371	κ ² Centauri.....	1	0.32	12. 17. 28.69	3.165			124. 21.					
372	δ Corvi.....	6	0.37	12. 22. 6.50	3.106	6		105. 40. 47.08		6	0.33	47.08	20.12
373	β Corvi.....	11	0.31	12. 26. 30.97	3.131	9		112. 34. 0.31		9	0.32	0.31	19.99
374	β Canum Venaticum.	1	0.38	12. 26. 36.37	2.865	2		47. 49. 35.62		2	0.28	35.62	19.64
375	κ Draconis.....	1	0.39	12. 27. 3.36	2.610	2		19. 23. 3.26		2	0.38	3.26	19.96
376	γ Virginis (N star)..			12. 34.(o)		3		90. 37. 31.24		3	0.36	31.24	19.85
377	γ Virginis (as one mass)	3	0.26	12. 34. 3.69	3.040			90. 38.					
378	γ Virginis (S star)..			12. 34.(o)		3		90. 37. 34.82		3	0.26	34.82	19.85
379	35 Virginis.....			12. 40.(10)		4		85. 36. 26.30		4	0.39	26.30	19.80
380	W. B. XII. 706....	1	0.33	12. 41. 18.92	3.009	1		75. 8. 36.20		1	0.33	36.20	19.73
381	ε Ursæ Majoris.....	2	0.59	12. 47. 24.95	2.668	4	1	33. 13. 29.51	29.65	5	0.47	29.54	19.69
382	B. A. C. 4339. S. P..	3	0.90	12. 47. 57.64	0.304	3		5. 45. 58.90		3	0.93	58.90	19.63
383	δ Virginis.....	2	0.16	12. 48. 2.91	3.023	2		85. 47. 10.98		2	0.16	10.98	19.71
384	B. A. C. 4342. S. P..	3	0.90	12. 48. 5.75	0.288	3		5. 46. 17.81		3	0.93	17.81	19.60
385	12 Canum Venat. (1st star)			12. 49.(o)		5		50. 52. 27.77		5	0.38	27.77	19.60
386	12 Canum Venat. (2nd star)	3	0.53	12. 49. 0.20	2.820	7	1	50. 52. 13.13	12.07	8	0.38	13.00	19.54
387	B. A. C. 4355.....	1	0.32	12. 52. 20.87	3.265			122. 41.					
388	ε Virginis.....	5	0.37	12. 54. 42.58	2.993	5		78. 13. 59.54		5	0.37	59.54	19.46
389	41 Comæ.....	4	0.40	12. 59. 58.58	2.888			61. 34.					
390	g Virginis.....			13. 0.(o)		4		99. 56. 13.85		4	0.39	13.85	19.40
391	θ Virginis.....	3	0.34	13. 2. 11.26	3.101	3		94. 44. 12.68		3	0.34	12.68	19.37
392	B. A. C. 4437.....			13. 8.(30)		1		120. 42. 40.64		1	0.40	40.64	19.16
393	γ Hydræ.....	5	0.37	13. 10. 46.60	3.247	3		112. 22. 42.13		3	0.39	42.13	19.11
394	B. A. C. 4452.....			13. 11.(10)		1		8. 44. 3.85		1	0.39	3.85	19.10
395	Spica.....	34	0.49	13. 17. 17.81	+3.149	15		100. 22. 37.16		15	0.44	37.16	18.95
396	B. A. C. 4498.....	6	0.67	13. 20. 54.75	-2.857	2		4. 27. 40.83		2	0.39	40.83	18.82
397	W. B. XIII. 364....	3	0.34	13. 22. 25.21	+3.015			83. 13.					
398	ζ Virginis.....	4	0.29	13. 27. 3.21	3.055			89. 50.					
399	81 Ursæ Majoris...	3	0.40	13. 28. 20.76	2.326			33. 53.					
400	B. A. C. 4548.....			13. 30.(20)		3		118. 47. 33.69		3	0.41	33.69	18.54
401	W. B. XIII. 597....			13. 34.(40)		2		88. 14. 37.55		2	0.41	37.55	18.37
402	Lalande 25360.....	4	0.40	13. 37. 48.36	2.977	3		80. 24. 19.77		3	0.40	19.77	18.26
403	W. B. XIII. 720....			13. 41.(30)		1		79. 10. 33.14		1	0.41	33.14	18.11
404	η Ursæ Majoris.....	10	0.77	13. 41. 37.39	+2.377	8		39. 56. 11.18		8	0.63	11.18	+18.15

367. Of the 7.8th magnitude.

380. Of the 7th magnitude.

369. Of the 9.10th magnitude.

402. Of about the 8th or 9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
405	B. A. C. 4614.	4	0.41	^h 13. ^m 42. ^s 5.22	+0.144			^o 11. ⁱ 11.	"			"	"
406	<i>v</i> Bootis	5	0.42	13. 42. 14.57	2.895	2		73. 27. 22.62		2	0.40	22.62	+18.04
407	Lalande 25569.	1	0.39	13. 46. 35.89	3.095			92. 16.					
408	<i>p</i> Virginis.			13. 47. (0)		5		90. 45. 46.08		5	0.41	46.08	17.95
409	<i>η</i> Bootis	17	0.52	13. 47. 32.55	2.859	5	3	70. 50. 54.27	54.16	8	0.43	54.23	18.23
410	<i>τ</i> Virginis.	1	0.45	13. 54. 0.86	3.050	1		87. 43. 38.79		1	0.46	38.79	17.69
411	<i>π</i> Hydræ			13. 57. (50)		1		115. 57. 24.68		1	0.41	24.68	17.60
412	<i>θ</i> Centauri	3	0.43	13. 57. 51.15	3.505	1		125. 37. 42.81		1	0.43	42.81	18.09
413	B. A. C. 4689.			13. 58. (30)		2	1	20. 35. 55.65	52.86	3	0.43	54.72	17.47
414	*	1	0.40	13. 59. 20.86	2.834	1		70. 25. 1.95		1	0.41	1.95	17.40
415	<i>κ</i> Virginis.	5	0.55	14. 4. 53.99	3.195	1		99. 34. 25.18		1	0.39	25.18	17.14
416	<i>i</i> Virginis	4	0.43	14. 8. 9.17	3.142	2		95. 16. 56.65		2	0.42	56.65	17.41
417	Arcturus.	28	0.61	14. 8. 49.28	2.733	20	9	70. 2. 4.29	3.27	29	0.55	3.97	18.93
418	<i>i</i> ¹ Bootis	4	0.43	14. 10. 51.19	2.130	2		37. 56. 21.46		2	0.42	21.46	16.80
419	<i>i</i> ² Bootis	1	0.42	14. 10. 53.20	2.144	1		37. 55. 46.97		1	0.43	46.97	16.87
420	<i>λ</i> Virginis.	2	0.66	14. 11. 0.05	3.237	1		102. 40. 40.50		1	0.39	40.50	16.84
421	<i>f</i> Bootis			14. 19. (30)		3	3	70. 5. 46.66	46.31	6	0.43	46.49	16.49
422	*	2	0.41	14. 23. 31.35	2.671			62. 56.					
423	<i>ρ</i> Bootis	1	0.46	14. 25. 22.06	2.590	1		58. 58. 1.33		1	0.45	1.33	16.02
424	*			14. 25. (50)		1		59. 3. 33.38		1	0.43	33.38	16.13
425	<i>γ</i> Bootis	1	0.47	14. 26. 2.12	2.429	1		51. 2. 0.22		1	0.47	0.22	15.98
426	*	4	0.42	14. 26. 21.54	+2.652	2		62. 17. 14.19		2	0.42	14.19	16.10
427	5 Ursæ Minoris	5	0.45	14. 27. 54.44	-0.244	4	4	13. 38. 13.29	13.93	10	0.53	13.63	16.05
428	*			14. 29. (10)		1		13.69					
429	*			14. 29. (10)		1		26. 0. 50.27		1	0.43	50.27	15.96
429	*			14. 30. (10)		2		26. 2. 37.47		2	0.43	37.47	15.90
430	<i>π</i> ¹ Bootis.	7	0.43	14. 33. 40.72	+2.816	2		72. 56. 11.20		2	0.42	11.20	15.69
431	<i>π</i> ² Bootis.	7	0.43	14. 33. 41.23	2.816	2		72. 56. 12.59		2	0.42	12.59	15.71
432	<i>ζ</i> Bootis	6	0.45	14. 33. 59.29	2.861	4		75. 37. 31.54		4	0.46	31.54	15.70
433	<i>ε</i> Bootis	22	0.54	14. 38. 26.19	2.622	12	4	62. 17. 26.26	26.44	16	0.48	26.31	15.45
434	109 Virginis.	3	0.44	14. 38. 40.13	3.029	2		87. 28. 20.15		2	0.42	20.15	15.46
435	8 Libræ	6	0.45	14. 42. 23.78	3.307	2		105. 22. 10.25		2	0.44	10.25	15.30
436	<i>α</i> Libræ	15	0.48	14. 42. 35.25	3.306	6		105. 24. 53.80		6	0.45	53.80	15.25
437	Rümker 4824.	3	0.41	14. 42. 36.62	2.529	3		58. 8. 8.31		3	0.42	8.31	15.22
438	*			14. 43. (0)		1		58. 8. 42.72		1	0.42	42.72	15.19
439	* (<i>e</i> ₇)	1	0.40	14. 44. 7.52	1.407			27. 49.					
440	<i>ξ</i> ¹ Bootis.			14. 44. (30)		1		70. 16. 22.61		1	0.43	22.61	15.11
441	<i>ξ</i> ² Bootis.	3	0.43	14. 44. 28.37	2.767	2		70. 16. 28.18		2	0.42	28.18	15.25
442	*	1	0.40	14. 46. 14.67	1.363			27. 27.					
443	<i>ξ</i> ² Libræ	2	0.46	14. 48. 38.02	+3.245	1		100. 48. 5.41		1	0.47	5.41	14.90
444	<i>β</i> Ursæ Minoris	12	0.65	14. 51. 12.00	-0.273	18	6	15. 13. 52.09	54.01	27	0.61	52.56	14.76
444	<i>β</i> Ursæ Minoris S.P.					3		52.38					
445	*	2	0.41	14. 51. 41.61	+2.453	1		55. 50. 30.25		1	0.42	30.25	14.69
446	*			14. 51. (50)		1		55. 51. 19.41		1	0.41	19.41	14.68
447	*			14. 51. (50)		2		55. 51. 41.01		2	0.43	41.01	14.68
448	<i>β</i> Bootis.	7	0.44	14. 56. 17.79	+2.264	5	1	49. 0. 55.27	57.26	6	0.46	55.60	+14.46

414, 445, 447. Of the 10th or 11th magnitude.

426. Of the 8.9th magnitude.

437. Of about the 11th magnitude.

439. Of the 7th magnitude. This star is identical with No. 54 in Argelander's Zone, 108.

441. The larger component of the double star.

442. Of the 8th magnitude. The result differs about 1^s from an observation in 1849.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D.—*continued*.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
449	ψ Bootis	2	0.46	^h 14. ^m 58. ^s 1.24	+2.572	3		62. 27. 53.28	"	3	0.46	53.28	+14.30
450	*	1	0.41	15. 3. 45.40	3.237	1		99. 46. 48.08		1	0.41	48.08	13.95
451	W. B. XV. 74.	1	0.41	15. 5. 7.37	3.236			99. 46.					
452	{ 2 Lupi	4	0.47	15. 8. 42.88	3.631	1		119. 35. 31.55		1	0.46	31.55	13.69
	{ B. A. C. 5032. }												
453	β Libræ	14	0.45	15. 8. 56.42	3.220	7		98. 49. 33.59		7	0.42	33.59	13.62
454	δ Bootis	3	0.45	15. 9. 27.42	2.421	5	2	56. 7. 22.04	23.05	7	0.46	22.33	13.67
455	*	1	0.40	15. 11. 56.35	2.305			52. 22. ±.					
456	σ^2 Libræ	2	0.46	15. 14. 40.19	3.333	3		104. 35. 40.41		3	0.46	40.41	13.24
457	B. A. C. 5064.	1	0.46	15. 14. 47.78	1.859			39. 15.					
458	*	1	0.41	15. 18. 24.37	3.469	1		111. 20. 40.35		1	0.41	40.35	13.00
459	μ^1 Bootis.	5	0.53	15. 18. 49.45	2.267	3	1	52. 5. 37.20	38.23	4	0.47	37.46	12.89
460	μ^2 Bootis.	2	0.47	15. 18. 50.90	2.277	1		52. 7. 24.35		1	0.46	24.35	12.97
461	*	1	0.40	15. 19. 44.05	3.476			111. 37.					
462	ζ^1 Libræ	2	0.47	15. 19. 48.20	3.374	1		106. 11. 23.12		1	0.47	23.12	12.94
463	ζ^2 Libræ			15. 21. (10)		2		106. 55. 8.39		2	0.44	8.39	12.79
464	γ Draconis	4	0.46	15. 21. 36.10	1.332	1	1	30. 30. 23.65	25.61	2	0.47	24.63	12.76
465	β Coronæ	3	0.44	15. 21. 38.68	2.480	1	1	60. 22. 27.59	29.25	2	0.47	28.42	12.71
466	B. A. C. 5099.			15. 21. (40)		1		106. 44. 7.69		1	0.45	7.69	12.78
467	36 Libræ			15. 25. (30)		2		117. 32. 13.78		2	0.43	13.78	12.57
468	37 Libræ	1	0.17	15. 25. 59.14	3.268			99. 33.					
469	γ Libræ	3	0.33	15. 27. 8.53	3.344	2		104. 17. 5.29		2	0.28	5.29	12.39
470	δ^1 Serpentis.	1	0.51	15. 27. 38.45	2.866	1		78. 57. 27.91		1	0.45	27.91	12.32
471	δ^2 Serpentis.	1	0.51	15. 27. 38.41	+2.866	3		78. 57. 23.47		3	0.46	23.47	12.32
472	39 Libræ			15. 28. (0)		2		117. 38. 0.48		2	0.43	0.48	12.32
473	B. A. C. 5140.	4	0.48	15. 27. 59.93	-24.315	1		2. 12. 8.24		3	0.64	7.73	12.35
	B. A. C. 5140 S. P. .												
474	α Coronæ	27	0.54	15. 28. 20.32	+2.538	12	3	62. 46. 40.21	38.85	15	0.65	39.94	12.38
475	41 Libræ												
				15. 30. (20)		6		108. 48. 14.08		6	0.45	14.08	12.22
476	η Libræ	3	0.34	15. 35. 38.43	3.371	2		105. 11. 26.15		2	0.28	26.15	11.86
477	α Serpentis.	21	0.51	15. 36. 52.96	2.951	11		83. 5. 55.92		11	0.56	55.92	11.66
478	β Serpentis.	6	0.48	15. 39. 16.04	2.767	5		74. 6. 18.11		5	0.46	18.11	11.56
479	λ Lupi.	4	0.44	15. 41. 26.21	3.789			123. 10.					
480	μ Serpentis.	3	0.51	15. 41. 47.79	3.128	1		92. 58. 1.13		1	0.52	1.13	11.38
481	α Serpentis.	2	0.49	15. 41. 59.46	2.700	1	(1)	71. 23. 29.10	(39.23)	1	0.47	29.10	11.41
482	B. A. C. 5240.			15. 43. (0)		1		119. 25. 35.69		1	0.47	35.69	11.44
483	ϵ Serpentis.	4	0.49	15. 43. 20.54	2.989			85. 4.					
484	B. A. C. 5253.			15. 45. (0)		2		114. 4. 52.34		2	0.47	52.34	11.15
485	θ Libræ	6	0.47	15. 45. 17.45	+3.410	4		106. 17. 3.42		4	0.47	3.42	10.99
486	B. A. C. 5279.			15. 48. (50)		2		33. 43. 40.86		2	0.46	40.86	10.86
487	ζ Ursæ Minoris	4	0.69	15. 49. 31.44	-2.330	7	5	11. 44. 48.13	47.60	13	0.46	47.82	10.81
	ζ Ursæ Minoris S. P.					1		46.76					
488	γ Serpentis.	10	0.47	15. 49. 31.72	+2.769	2		73. 50. 43.69		2	0.50	43.69	12.05
489	δ Scorpil.	7	0.43	15. 51. 28.26	3.535	5		112. 11. 24.09		5	0.48	24.09	10.68
490	β^1 Scorpil.	16	0.46	15. 56. 43.28	3.478	7		109. 23. 25.42		7	0.48	25.42	10.29
491	β^2 Scorpil.	5	0.49	15. 56. 43.72	+3.470	6		109. 23. 13.11		6	0.48	13.11	+10.36

450, 458. Of the 9.10th magnitude.

461. Of the 11th magnitude.

459. This is the larger component.

470, 471. The preceding star is half a magnitude smaller than the following, and of greater N. P. D.

479. This star is designated χ Lupi in the B. A. C.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
492	ω^1 Scorpii	5	0.47	^h 15. 58. (0)	+3.508	5		^o 110. 15. 29.31	"	5	0.49	29.31	+10.17
493	ω^2 Scorpii			15. 58. 36.87		3		110. 27. 31.76		3	0.49	31.76	10.15
494	θ Draconis			15. 59. (10)		1	1	31. 1. 57.64	57.82	2	0.43	57.73	9.78
495	B. A. C. 5352			15. 59. 22.76				6. 36.					
496	ν^1 Scorpii	3	0.48	16. 3. 15.89	+3.482	5		109. 3. 21.04		5	0.48	21.04	9.89
497	ν^2 Scorpii	5	0.48	16. 3. 17.09	3.478	6		109. 3. 59.68		6	0.48	59.68	9.75
498	B.A.C. 5406			16. 6. (0)		1	1	21. 47. 41.24	38.30	2	0.45	39.77	9.50
499	δ Ophiuchi	14	0.48	16. 6. 29.32	3.138	9		93. 18. 13.79		9	0.50	13.79	9.64
500	ϵ Ophiuchi	6	0.58	16. 10. 23.29	3.168	4		94. 19. 21.63		4	0.49	21.63	9.19
501	19 Ursæ Minoris ...			16. 15. (10)		1	1	13. 44. 48.70	49.25	2	0.47	48.98	8.86
502	τ Herculis	6	0.59	16. 15. 14.13	1.799	1		43. 19. 36.90		1	0.53	36.90	8.83
503	γ Herculis	4	0.48	16. 15. 18.30	2.645	4	3	70. 29. 26.71	28.68	7	0.51	27.56	8.80
504	Antares.	11	0.48	16. 20. 12.98	3.665	5		116. 5. 39.30		5	0.50	39.30	8.46
505	22 Scorpii			16. 21. (10)		1		114. 46. 46.32		1	0.52	46.32	8.40
506	α Normæ	1	0.47	16. 21. 35.25	3.899			124. 22.					
507	B. A. C. 5509	1	0.52	16. 21. 48.81	0.780			27. 58.					
508	η Draconis	6	0.72	16. 21. 58.15	0.820	8	3	28. 8. 41.95	42.09	11	0.58	41.99	8.24
509	ω Ophiuchi			16. 23. (20)		3		111. 8. 26.26		3	0.49	26.26	8.14
510	λ Ophiuchi	4	0.50	16. 23. 21.14	3.027	1		87. 40. 59.46		1	0.52	59.46	8.27
511	β Herculis	4	0.48	16. 23. 46.39	2.576	3		68. 10. 46.48		3	0.50	46.48	8.17
512	ζ Ophiuchi	5	0.52	16. 28. 54.18	3.299	5		100. 15. 30.67		5	0.49	30.67	7.73
513	ξ Herculis	5	0.52	16. 35. 37.99	2.265	6	5	58. 7. 21.01	21.07	11	0.53	21.04	6.79
514	*			16. 38. (20)		1		86. 50. 4.30		1	0.52	4.30	7.00
515	g Draconis S. P. ...			16. 39. (50)		2		25. 7. 34.78		2	0.14	34.78	6.92
516	B. A. C. 5629			16. 39. (50)		1	1	34. 1. 55.48	55.07	2	0.50	55.28	6.87
517	ϵ Scorpii	1	0.51	16. 40. 27.09	3.875			124. 1.					
518	W. B. XVI. 782 ...	1	0.52	16. 40. 31.71	2.758			76. 4.					
519	W. B. XVI. 790 ...	1	0.50	16. 40. 58.09	2.754			75. 54.					
520	*			16. 46. \pm		1		73. 51. 47.62		1	0.52	47.62	6.36
521	*			16. 45. (50)		1		73. 49. 23.94		1	0.52	23.94	6.38
522	*			16. 46. (30)		1		73. 55. 8.48		1	0.50	8.48	6.32
523	53 Herculis			16. 47. (20)		1	1	58. 2. 49.43	48.07	2	0.51	48.75	6.26
524	κ Ophiuchi	3	0.53	16. 50. 34.26	2.838			80. 23.					
525	*	1	0.51	16. 51. 5.52	3.358			102. 39.					
526	ϵ Herculis	5	0.51	16. 54. 33.18	+2.294	2	2	58. 50. 58.10	57.73	4	0.51	57.92	5.58
527	*			16. 55. (20)		1		29. 58. 34.00		1	0.52	34.00	5.58
528	W. B. XVI. 1135 ...			16. 59. (50)		1		85. 25. 57.99		1	0.52	57.99	5.12
529	ϵ Ursæ Minoris	5	0.77	17. 1. 31.30	-6.521	7	7	7. 43. 27.78	27.80	14	0.55	27.79	5.07
530	η Ophiuchi	8	0.39	17. 1. 46.79	+3.435			105. 32.					
531	W. B. XVII. 12 ...			17. 2. (10)		1		85. 52. 13.18		1	0.52	13.18	5.01
532	α^1 Herculis	15	0.48	17. 7. 48.60	2.732	4		75. 26. 6.45		4	0.56	6.45	4.47
533	α^2 Herculis	1	0.53	17. 7. 48.96	2.732			75. 26.					
534	ζ Draconis	1	0.47	17. 8. 21.14	0.159	3	2	24. 6. 1.24	0.03	5	0.51	0.76	4.47
535	δ Herculis	1	0.51	17. 8. 52.42	2.459	2	1	64. 58. 49.64	48.94	3	0.53	49.41	4.59
536	π Herculis	3	0.55	17. 9. 49.67	2.088			53. 1.					
537	u Herculis	4	0.55	17. 11. 47.20	+2.212	3	1	56. 44. 7.78	6.36	4	0.55	7.42	+4.17

496, 497. Of the 7th and 4½ magnitude respectively.

525. This is one of the variable stars detected by Mr. Hind. On July 5, it was noted as being of the 11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
538	ξ Ophiuchi	1	0.32	17. 12. 1.33 ^{h m s}	+3.592	1		110. 56. 49.10 ^{° ′ ″}	"	1	0.32	49.10	+ 4.36
539	ν Serpentis	2	0.17	17. 12. 23.79	3.371			102. 41.					
540	θ Ophiuchi	2	0.52	17. 12. 47.93	3.680	3		114. 50. 39.22		3	0.58	39.22	4.15
541	*			17. 16. (o)		1		57. 59. 17.26		1	0.57	17.26	3.83
542	d Ophiuchi	1	0.59	17. 17. 46.58	3.819	1		119. 43. 32.73		1	0.59	32.73	3.87
543	ρ ¹ Herculis	3	0.55	17. 18. 30.22	2.069	3		52. 42. 45.13		3	0.55	45.13	3.61
544	ρ ² Herculis	3	0.55	17. 18. 30.54	2.073	3		52. 42. 47.79		3	0.55	47.79	3.59
545	σ Ophiuchi	2	0.54	17. 19. 4.47	2.977	4		85. 43. 30.80		4	0.57	30.80	3.54
546	λ Scorpii	1	0.59	17. 23. 25.62	4.072			126. 59.					
547	β Draconis	3	0.68	17. 27. 2.31	1.350	7		37. 35. 7.81		7	0.62	7.81	2.87
548	W. B. XVII. 508. . .	1	0.59	17. 27. 4.70	2.774			77. 23.					
549	*	1	0.50	17. 27. 30.92	2.649			72. 18.					
550	α Ophiuchi	22	0.54	17. 27. 58.41	2.779	5	1	77. 19. 36.15	36.43	6	0.63	36.20	2.98
551	ξ Serpentis	1	0.40	17. 29. 0.10	3.433	2		105. 17. 56.13		2	0.56	56.13	2.75
552	Lalande 32112. . . .	2	0.56	17. 29. 22.86	2.148	2		55. 8. 53.39		2	0.60	53.39	2.67
553	ο Serpentis	2	0.48	17. 32. 59.23	3.369			102. 47.					
554	ι Herculis	6	0.57	17. 35. 13.93	1.713	3	1	43. 54. 41.28	41.57	4	0.58	41.35	2.15
555	β Ophiuchi	3	0.56	17. 36. 3.84	+2.964	3		85. 21. 57.65		3	0.59	57.65	1.92
556	ω Draconis	3	0.57	17. 37. 50.21	-0.362	3	3	21. 10. 22.49	22.37	6	0.54	22.43	1.66
557	γ Ophiuchi	5	0.55	17. 40. 22.38	+3.004	4		87. 13. 55.69		4	0.60	55.69	1.79
558	μ Herculis	4	0.57	17. 40. 35.40	2.344	3	2	62. 11. 18.06	18.04	5	0.58	18.05	2.42
559	89 Herculis	5	0.55	17. 49. 22.21	2.425	4		63. 55. 20.92		4	0.60	20.92	0.89
560	4 Sagittarii	1	0.48	17. 50. 38.25	3.661			113. 48.					
561	ν Ophiuchi	4	0.58	17. 50. 46.07	3.304	2		99. 45. 0.60		2	0.59	0.60	0.91
562	ξ Draconis	2	0.60	17. 50. 56.25	1.036	1	1	33. 6. 7.96	7.10	2	0.53	7.53	0.73
563	η Herculis	2	0.54	17. 51. 6.56	2.055	1		52. 43. 35.87		1	0.59	35.87	0.73
564	Lalande 32981. . . .			17. 51. (40)		2		38. 28. 44.17		2	0.58	44.17	0.73
565	ξ Herculis	1	0.65	17. 51. 56.28	2.332	2	2	60. 43. 57.69	59.48	4	0.59	58.59	0.73
566	ν Herculis			17. 52. (50)		1		59. 47. 43.71		1	0.64	43.71	0.63
567	66 Ophiuchi			17. 52. (50)		1		85. 37. 7.62		1	0.61	7.62	0.62
568	γ Draconis	8	0.51	17. 53. 7.45	1.393	12		38. 29. 29.08		12	0.51	29.08	0.64
569	67 Ophiuchi	5	0.58	17. 53. 7.96	3.010			87. 3.					
570	*			17. 54. (20)		1		45. 3. 0.97		1	0.64	0.97	0.50
571	γ ¹ Sagittarii	2	0.61	17. 55. 26.20	3.840	1		119. 34. 50.19		1	0.63	50.19	0.48
572	γ ² Sagittarii	2	0.55	17. 56. 10.27	3.858	2		120. 25. 12.46		2	0.57	12.46	0.57
573	*			17. 56. (40)		2		41. 35. 9.93		2	0.58	9.93	+ 0.29
574	72 Ophiuchi	5	0.54	18. 0. 14.29	2.844	5		80. 27. 11.43		5	0.58	11.43	- 0.10
575	μ Sagittarii	16	0.57	18. 4. 47.54	3.587	11		111. 5. 33.98		11	0.56	33.98	0.43
576	η Sagittarii	1	0.64	18. 7. 28.64	4.056			126. 48.					
577	B. A. C. 6216.			18. 12. (o)		1	1	33. 27. 41.76	40.73	2	0.48	41.25	1.05
578	η Serpentis	5	0.59	18. 13. 32.90	3.102	5		92. 56. 0.59		5	0.57	0.59	0.54
579	ε Sagittarii	1	0.70	18. 14. 12.79	+3.987	3		124. 47. 2.11		3	0.58	2.11	1.16
580	37 Draconis	1	0.52	18. 16. 9.53	-0.353			21. 18.					
581	λ Sagittarii	2	0.68	18. 18. 42.71	+3.707	3		115. 29. 56.52		3	0.61	56.52	1.41
582	δ Ursæ Minoris . . .	11	0.38	18. 20. 43.76	-19.296	13	8	3. 24. 9.60	9.48	27	0.49	9.24	- 1.82
	δ Ursæ Minoris S. P.					6		8.13					

543, 544. The second star is the larger.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.	T. D.	T. R.	Mean N. P. D. 1850, Jan. 1.	Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
583	B. A. C. 6285.....	1	0.70	18. 21. 14.36	+3.936				123. 5.				
584	b Draconis.....			18. 21. (40)		2	2		31. 17. 5.71	4	0.55	4.47	- 1.94
585	φ Draconis S. P. ...	2	0.59	18. 22. 54.29	-0.848	1			18. 44. 34.98	1	0.13	34.98	2.01
586	*			18. 25. (40)		1			70. 30. 11.86	1	0.55	11.86	2.24
587	24 Ursæ Minoris ...	6	0.69	18. 26. 16.70	-22.053	4			3. 1. 36.30	4	0.63	36.30	2.30
588	α Lyrae.....	33	0.58	18. 31. 51.60	+2.031	30	13		51. 21. 10.77	43	0.61	10.59	3.08
589	φ Sagittarii.....	7	0.52	18. 36. 16.96	3.758	6			117. 8. 21.85	6	0.57	21.85	3.13
590	β ¹ Lyrae.....	30	0.58	18. 44. 32.56	2.213	19	17		56. 48. 30.77	36	0.63	30.74	3.86
591	β ² Lyrae.....	9	0.58	18. 44. 34.49	2.213	3			56. 49. 9.31	3	0.65	9.31	3.87
592	σ Sagittarii.....	4	0.48	18. 45. 57.69	3.729	2			116. 28. 37.47	2	0.48	37.47	3.92
593	*	1	0.59	18. 52. 23.88	2.725				75. 8.				
594	ε Aquilæ.....	6	0.56	18. 52. 48.94	2.723	6			75. 7. 52.82	6	0.59	52.82	4.48
595	γ Lyrae.....	5	0.60	18. 53. 19.94	2.244	15	12		57. 30. 47.16	27	0.65	46.93	4.65
596	ο Sagittarii.....	4	0.57	18. 55. 41.51	3.600	1			111. 57. 22.12	1	0.55	22.12	4.80
597	λ Aquilæ.....	5	0.63	18. 58. 17.22	3.187	8			95. 6. 10.90	8	0.63	10.90	4.98
598	ξ Aquilæ.....	25	0.55	18. 58. 30.95	2.755	10			76. 21. 20.11	10	0.64	20.11	5.01
599	π Sagittarii.....	4	0.52	19. 0. 50.51	3.575	2			111. 15. 25.07	2	0.52	25.07	5.27
600	ω Aquilæ.....	8	0.58	19. 10. 46.50	2.818	6			78. 40. 15.80	6	0.63	15.80	6.16
601	κ Cygni.....	4	0.62	19. 13. 38.03	1.389	7			36. 54. 22.05	7	0.65	22.05	6.42
602	δ Aquilæ.....	22	0.62	19. 17. 56.06	3.025	10			87. 10. 48.17	10	0.67	48.17	6.81
603	π Draconis.....	5	0.67	19. 19. 53.28	0.332	8	6		24. 34. 26.37	14	0.63	25.95	6.87
604	*	1	0.51	19. 21. 12.82	3.584				112. 14.				
605	α Vulpeculæ.....	5	0.64	19. 22. 27.90	2.495	7			65. 38. 7.79	7	0.66	7.79	6.97
606	β ¹ Cygni.....	5	0.66	19. 24. 40.40	2.420	4	3		62. 21. 7.88	7	0.68	7.79	7.26
607	β ² Cygni.....	3	0.66	19. 24. 42.54	2.420	1			62. 20. 48.13	1	0.70	48.13	7.29
608	B. A. C. 6693.....	3	0.67	19. 25. 29.62	3.846				121. 56.				
609	μ Aquilæ.....	5	0.63	19. 26. 45.65	2.934	9			82. 56. 8.03	9	0.66	8.03	7.32
610	h ² Sagittarii.....	3	0.65	19. 27. 34.38	3.663	2			115. 12. 35.35	2	0.59	35.35	7.48
611	κ Aquilæ.....	5	0.61	19. 28. 49.19	3.233	6			97. 21. 23.46	6	0.67	23.46	7.60
612	α Sagittæ.....	5	0.62	19. 33. 23.54	2.685	5			72. 19. 38.61	5	0.66	38.61	7.98
613	φ Cygni.....	5	0.64	19. 33. 27.19	2.368	5	2		60. 11. 21.76	7	0.69	21.48	8.01
614	e ² Sagittarii.....	5	0.66	19. 33. 56.12	3.440	4			106. 28. 15.52	4	0.65	15.52	8.03
615	f Sagittarii.....			19. 37. (40)		1			110. 7. 1.90	1	0.63	1.90	8.26
616	γ Aquilæ.....	15	0.56	19. 39. 7.66	2.855	12			79. 44. 54.07	12	0.68	54.07	8.42
617	δ Cygni.....	5	0.71	19. 40. 17.11	1.876	1	1		45. 13. 58.17	2	0.72	58.30	8.50
618	δ Sagittæ.....	5	0.67	19. 40. 41.86	2.684	4			71. 49. 56.56	4	0.69	56.56	8.58
619	α Aquilæ.....	23	0.52	19. 43. 27.84	2.929	12			81. 31. 26.86	12	0.43	26.86	9.14
620	η Aquilæ.....	5	0.67	19. 44. 49.88	3.060	6			89. 22. 30.92	6	0.66	30.92	8.82
621	B. A. C. 6816.....			19. 45. (30)		2			123. 25. 58.55	2	0.68	58.55	8.98
622	β Aquilæ.....	20	0.61	19. 47. 56.66	2.950	11			83. 57. 50.42	11	0.67	50.42	8.64
623	c Sagittarii.....	6	0.66	19. 53. 25.58	3.705	7			118. 7. 19.66	7	0.67	19.66	9.58
624	ρ Draconis.....	2	0.68	20. 2. 7.61	0.300	8	6		22. 33. 14.67	14	0.68	14.42	10.23
625	θ Aquilæ.....	4	0.72	20. 3. 33.81	3.103	2			91. 15. 45.09	2	0.73	45.09	10.32
626	α ¹ Capricorni.....	5	0.70	20. 9. 19.79	3.334	9			102. 58. 4.11	9	0.66	4.11	10.75
627	α ² Capricorni.....	12	0.59	20. 9. 43.71	3.335	10			103. 0. 21.14	10	0.65	21.14	10.77
628	B. A. C. 6992.....	1	0.63	20. 12. 20.57	+3.379	2			105. 15. 13.75	2	0.63	13.75	-10.94

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
629	β Capricorni	6	0.61	^h ^m ^s 20. 12. 34.84	+3.380	3		⁰ ¹ ["] 105. 15. 4.12	"	3	0.56	4.12	-11.01
630	λ Ursæ Minoris	7	0.71	20. 13. 2.25	-53.331	3	2	1. 8. 23.03	22.04	8	0.48	22.07	10.99
	λ Ursæ Minoris S.P.					3		21.13					
631	γ Cygni	7	0.71	20. 16. 50.69	+2.153	3	1	50. 13. 16.02	15.40	4	0.69	15.87	11.30
632	B. A. C. 7032			20. 18. (50)		2		118. 45. 2.98		2	0.73	2.98	11.41
633	B. A. C. 7033			20. 18. (50)		2		119. 51. 47.62		2	0.73	47.62	11.42
634	ϵ Delphini	5	0.65	20. 26. 2.81	2.868	5		79. 12. 12.53		5	0.72	12.53	11.93
635	ζ Delphini	1	0.65	20. 28. 17.67	2.807			75. 50.					
636	β Delphini	5	0.69	20. 30. 30.89	2.813	2		75. 55. 23.56		2	0.73	23.56	12.23
637	α Delphini	6	0.66	20. 32. 40.21	2.791	4		74. 36. 49.72		4	0.70	49.72	12.41
638	α Cygni	15	0.49	20. 36. 19.13	2.042	9	3	45. 15. 13.22	11.11	12	0.45	12.69	12.65
639	δ Delphini	5	0.67	20. 36. 27.39	2.804	3		75. 27. 37.75		3	0.70	37.75	12.63
640	ϵ Aquarii	3	0.71	20. 39. 33.19	3.259	2		100. 2. 29.27		2	0.74	29.27	12.84
641	γ^1 Delphini	4	0.71	20. 39. 41.09	2.786			74. 25.					
642	γ^2 Delphini	5	0.71	20. 39. 41.96	2.785	1		74. 24. 47.56		1	0.70	47.56	12.72
643	ϵ Cygni	4	0.73	20. 40. 8.67	2.426	4	2	56. 35. 20.09	20.74	6	0.67	20.31	13.23
644	β Microscopii	1	0.69	20. 42. 38.66	3.755			123. 44.					
645	32 Vulpeculæ	6	0.66	20. 48. 10.05	2.557	4	1	62. 30. 35.76	36.29	5	0.76	35.87	13.47
646	ν Cygni	5	0.66	20. 51. 34.91	+2.234	8	4	49. 24. 28.72	29.95	12	0.66	29.13	13.68
647	76 Draconis	8	0.74	20. 53. 7.98	-3.832	2		8. 1. 44.36		2	0.73	44.36	13.78
648	θ Capricorni	7	0.67	20. 57. 30.52	+3.387	4		107. 49. 32.97		4	0.74	32.97	14.00
649	ξ Cygni			20. 59. (30)		1	1	46. 40. 5.97	6.56	2	0.56	6.27	14.17
650	61 Cygni (1st star) ..	11	0.73	21. 0. 10.56	2.673	5		51. 59. 6.89		5	0.69	6.89	17.42
651	61 Cygni (2nd star) ..	11	0.73	21. 0. 12.00	2.673	4		51. 59. 10.78		4	0.68	10.78	17.42
652	ν Aquarii	1	0.79	21. 1. 25.16	3.276	1		101. 58. 33.65		1	0.79	33.65	14.28
653	ζ Cygni	24	0.64	21. 6. 33.26	2.550	8	3	60. 23. 9.49	9.84	11	0.71	9.59	14.52
654	29 Capricorni	1	0.64	21. 7. 26.36	3.334	1		105. 47. 26.76		1	0.64	26.76	14.66
655	α Equulei	5	0.72	21. 8. 19.45	3.005	2		85. 22. 10.27		2	0.75	10.27	14.61
656	ι Capricorni	6	0.69	21. 13. 53.27	3.357	1		107. 28. 13.06		1	0.64	13.06	15.07
657	α Cephei	2	0.34	21. 14. 59.69	1.438	7	6	28. 2. 54.68	55.42	13	0.67	55.02	15.08
658	*			21. 17. \pm		1		92. 51. 55.24		1	0.80	55.24	15.19
659	β Aquarii	19	0.71	21. 23. 39.55	3.168	4		96. 13. 41.75		4	0.75	41.75	15.60
660	*			21. 24. \pm		1		85. 35. 23.39		1	0.70	23.39	15.59
661	W. B. XXI. 571 ...	1	0.69	21. 24. 24.64	3.003	1		85. 21. 55.96		1	0.69	55.96	15.61
662	W. B. XXI. 630 ...			21. 26. (30)		2		75. 4. 47.11		2	0.80	47.11	15.72
663	β Cephei	3	0.75	21. 26. 42.27	+0.806	7	7	20. 5. 48.57	48.64	14	0.73	48.61	15.68
664	W. B. XXI. 637 ...			21. 26. (40)		3		74. 58. 33.32		3	0.80	33.32	15.73
665	B. A. C. 7504	6	0.78	21. 28. 31.20	-10.001	2	1	3. 35. 36.71	36.79	3	0.74	36.74	15.83
666	ϵ Capricorni	1	0.56	21. 28. 40.38	+3.375			110. 8.					
667	ξ Aquarii	5	0.81	21. 29. 45.75	3.202	5		98. 31. 26.05		5	0.79	26.05	15.89
668	κ Capricorni	1	0.56	21. 34. 16.43	3.364	1		109. 32. 50.31		1	0.56	50.31	16.16
669	B. A. C. 7545			21. 34. (20)		1		33. 11. 15.29		1	0.78	15.29	16.13
670	ϵ Pegasi	18	0.67	21. 36. 49.11	2.951	11		80. 48. 36.10		11	0.75	36.10	16.29
671	*	1	0.64	21. 38. 37.28	2.951			81. 13.					
672	δ Capricorni	5	0.76	21. 38. 45.43	3.323	6		106. 48. 19.49		6	0.82	19.49	16.12
673	μ Capricorni	2	0.67	21. 45. 6.72	+3.285	1		104. 15. 19.23		1	0.64	19.23	-16.72

660. Of the 10th magnitude.

661. Of the 8.9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R. A.		Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				1850, Jan. 1.				T. D.	T. R.	T. D.	T. R.				
674	*			21. 45. (20)				1		24. 48. 46.04	"	1	0.85	46.04	-16.69
675	16 Pegasi	5	0.73	21. 46. 14.34	+2.730			8	5	64. 46. 43.47	42.57	13	0.78	43.12	16.72
676	*			21. 46. (30)				1		24. 33. 45.48		1	0.84	45.48	16.75
677	*	1	0.59	21. 51. 39.40	2.928					78. 36.					
678	13 Piscis Australis .	1	0.64	21. 55. 44.27	3.488					120. 38.					
679	α Aquarii	16	0.74	21. 58. 4.70	3.083			10		91. 2. 47.33		10	0.81	47.33	17.29
680	ι Aquarii	2	0.79	21. 58. 19.82	3.252					104. 36.					
681	18 Cephei			21. 59. (20)				1	1	27. 36. 32.57	30.68	2	0.69	31.63	17.34
682	ι Pegasi	5	0.79	22. 0. 1.79	2.788			4	1	65. 23. 7.31	8.78	5	0.77	7.60	17.42
683	θ Pegasi	5	0.71	22. 2. 37.94	3.033			3		84. 32. 17.21		3	0.79	17.21	17.53
684	*			22. 2. (50)				1		34. 49. 33.52		1	0.83	33.52	17.49
685	*			22. 3. (0)				2		34. 9. 16.37		2	0.84	16.37	17.50
686	*			22. 4. (50)				1		34. 39. 5.78		1	0.79	5.78	17.58
687	ζ Cephei			22. 5. (40)				7	4	32. 32. 12.87	12.77	11	0.80	12.83	17.60
688	*	1	0.86	22. 8. 43.09	3.204					102. 2.					
689	θ Aquarii	7	0.74	22. 8. 54.85	3.175			5		98. 31. 40.57		5	0.81	40.57	17.75
690	ε Cephei			22. 9. (30)				2	2	33. 42. 10.57	9.44	4	0.62	10.01	17.81
691	γ Aquarii	5	0.68	22. 13. 54.44	3.106			8		92. 8. 29.09		8	0.82	29.09	17.99
692	W. B. XXII. 288..	2	0.86	22. 14. 13.85	3.193					101. 36.					
693	B. A. C. 7810.	3	0.74	22. 17. 17.52	1.772			1		24. 3. 2.13		1	0.69	2.13	18.07
694	*	1	0.76	22. 17. 18.27	1.773					24. 3.					
695	*	2	0.85	22. 19. 56.58	2.319					36. 57.					
696	σ Aquarii	1	0.64	22. 22. 42.26	3.184			1		101. 26. 35.30		1	0.64	35.30	18.36
697	β Piscis Australis .	3	0.84	22. 22. 57.92	+3.437			1		123. 6. 38.85		1	0.91	38.85	18.26
698	6 Lacertæ			22. 24. (0)				1	1	47. 38. 38.34	41.33	2	0.64	39.84	18.33
699	B. A. C. 7851.	3	0.81	22. 24. 30.28	-3.501			1		4. 38. 58.56		1	0.69	58.56	18.35
700	B. A. C. 7854.	2	0.84	22. 25. 1.74	-3.682			1		4. 32. 4.83		1	0.76	4.83	18.38
701	η Aquarii	2	0.86	22. 27. 38.85	+3.087			1		90. 53. 23.40		1	0.83	23.40	18.40
702	*	2	0.89	22. 31. 26.79	-7.682			4		2. 40. 57.98		4	0.83	57.98	18.57
703	B. A. C. 7897.	3	0.64	22. 32. 13.09	+3.165			4		100. 8. 28.01		4	0.64	28.01	18.49
704	ε Piscis Australis .	3	0.86	22. 32. 21.07	3.338			1		117. 49. 26.50		1	0.84	26.50	18.59
705	ζ Pegasi	19	0.88	22. 33. 58.93	2.990			8		79. 57. 0.82		8	0.80	0.82	18.68
706	η Pegasi	5	0.80	22. 35. 58.54	2.805			9	3	60. 33. 42.53	42.49	12	0.79	42.52	18.71
707	μ Pegasi	5	0.76	22. 42. 45.98	2.888			9	2	66. 11. 21.37	20.29	11	0.80	21.17	18.91
708	λ Aquarii	5	0.74	22. 44. 47.21	3.133			8		98. 22. 35.27		8	0.81	35.27	19.05
709	δ Aquarii	5	0.81	22. 46. 41.03	3.195			6		106. 37. 0.89		6	0.81	0.89	19.06
710	Fomalhaut	18	0.76	22. 49. 21.10	3.335			9		120. 24. 55.82		9	0.77	55.82	18.96
711	α Andromedæ	5	0.86	22. 55. 1.70	2.745			6	5	48. 28. 45.31	45.02	11	0.82	45.18	19.28
712	β Pegasi	5	0.81	22. 56. 30.51	2.898			5	3	62. 43. 46.29	47.81	8	0.80	46.86	19.46
713	α Pegasi	18	0.75	22. 57. 17.53	2.983			5		75. 36. 2.54		5	0.86	2.54	19.31
714	Groombridge 3993 .			23. 1. (40)				3		27. 10. 38.57		3	0.78	38.57	19.41
715	φ Aquarii	2	0.83	23. 6. 33.13	3.114			2		96. 51. 22.80		2	0.83	22.80	19.35
716	γ Piscium	7	0.78	23. 9. 23.42	3.110			5		87. 32. 10.07		5	0.81	10.07	19.61
717	ψ ³ Aquarii	1	0.87	23. 11. 9.26	3.128			1		100. 25. 49.16		1	0.87	49.16	19.62
718	Piazzi XXIII. 48...			23. 12. (20)				1		66. 59. 33.62		1	0.86	33.62	19.62
719	κ Piscium	5	0.78	23. 19. 14.66	+3.079			3		89. 33. 53.98		3	0.82	53.98	-19.64

685. Of the 7.8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—concluded.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of Year for Mean of Obs.	Mean R. A. 1850, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1850, Jan. 1.		Whole Number of Obs. of N. P. D.	Frac- tion of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						T. D.	T. R.	T. D.	T. R.				
720	*	2	0.90	^h 23. ^m 23. ^s 55.81	+2.840			[°] 42. ['] 11.	"			"	"
721	W. B. XXIII. 487.			23. 24. (10)		1		81. 30. 20.20		1	0.79	20.20	-19.81
722	*			23. 25. (50)		1		80. 47. 29.21		1	0.78	29.21	19.83
723	{ B. A. C. 8213 ... } { Cephei 39 (Hev). }	4	0.88	23. 27. 49.36	0.073	2	1	3. 31. 13.46	12.40	3	0.90	13.11	19.88
724	*	1	0.87	23. 29. 9.78	3.055	1		84. 54. 46.02		1	0.87	46.02	19.87
725	Andromedæ	5	0.85	23. 30. 47.45	2.918	3		47. 33. 41.01		3	0.85	41.01	19.94
726	W. B. XXIII. 644.			23. 31. (10)		1		78. 57. 19.91		1	0.75	19.91	19.90
727	♏ Piscium	18	0.82	23. 32. 14.24	3.085	5		85. 11. 9.73		5	0.84	9.73	19.47
728	γ Cephei	2	0.86	23. 33. 14.47	2.388	5	2	13. 12. 17.78	14.97	7	0.83	16.98	20.08
729	λ Piscium	1	0.64	23. 34. 23.46	3.064	1		89. 2. 41.97		1	0.64	41.97	19.80
730	20 Piscium	1	0.64	23. 40. 13.77	3.085	1		93. 35. 42.10		1	0.64	42.10	20.00
731	♏ Sculptoris	5	0.78	23. 41. 6.44	3.141	6		118. 57. 33.53		6	0.82	33.53	19.89
732	*	5	0.78	23. 44. 59.64	3.049	5		75. 41. 46.91		5	0.79	46.91	20.01
733	*			23. 49. (20)		1		85. 19. 59.10		1	0.93	59.10	20.03
734	W. B. XXIII. 1032	1	0.93	23. 50. 7.16	3.066			85. 26.					
735	27 Piscium	2	0.83	23. 50. 59.59	3.072	1		94. 23. 17.53		1	0.87	17.53	19.92
736	♏ Piscium	5	0.78	23. 51. 36.66	3.080	11		83. 58. 0.85		11	0.85	0.85	19.96
737	B. A. C. 8336	8	0.85	23. 52. 37.34	2.461	5	2	4. 7. 43.74	42.63	7	0.79	43.42	20.04
738	30 Piscium	1	0.79	23. 54. 15.96	3.082			96. 51.					
739	2 Ceti	5	0.83	23. 56. 3.04	3.082	7		108. 10. 15.63		7	0.85	15.63	20.07
740	33 Piscium	1	0.87	23. 57. 39.46	3.076			96. 33.					
741	W. B. XXIII. 1208			23. 58. (40)		1		101. 36. 47.56		1	0.84	47.56	20.06
742	W. B. XXIII. 1227	1	0.82	23. 59. 42.23	+3.071	1		101. 52. 6.81		1	0.82	6.81	-20.06

720. Of the 10.11th magnitude.

732. Of about the 10th magnitude.

741. Of the 8th magnitude.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1850.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
3	W. B. 0. 80	0.10341	0.07973	1.44814	0.07292	84.994	9.88885	0.16121	0.69467	0.08701	117.921
5 *	{ R. A. 0 ^h . 8 ^m . (0 ^s). } { N. P. D. 101 ^o . 55' .. }	0.10315	0.08005	1.44810	0.07406	84.917	9.88536	0.14809	0.69507	0.09164	118.823
7 *	{ R. A. 0 ^h . 10 ^m . (30 ^s). } { N. P. D. 1 ^o . 23' .. }	*	...	...	...	...	0.09184	9.30402	0.69588	0.09553	136.969
8	W. B. 0. 189.	0.10312	0.08038	1.44804	0.07412	84.897	9.88372	0.14736	0.69628	0.09648	118.589
10	W. B. 0. 361.	0.10330	0.08153	1.44775	0.07298	84.903	9.87852	0.16064	0.70188	0.11207	116.510
17	W. B. 0. 551.	0.10270	0.08260	1.44781	0.07551	84.697	9.87483	0.13025	0.71127	0.12730	117.830
19 *	{ R. A. 0 ^h . 37 ^m . (0 ^s). } { N. P. D. 97 ^o . 20' .. }	0.10256	0.08306	1.44782	0.07610	84.633	9.87448	0.12245	0.71626	0.13366	117.878
23 *	{ R. A. 0 ^h . 43 ^m . ± .. } { N. P. D. 102 ^o . 34' .. }	0.10281	0.08377	1.44739	0.07387	84.751	9.86670	0.15037	0.72416	0.14192	115.243
24	B. A. C. 240. ....	†	...	...	...	...	0.13972	9.34120	0.72601	0.14398	128.816
27	W. B. 0. 834.	0.10263	0.08429	1.44737	0.07433	84.698	9.86510	0.14484	0.73114	0.14868	115.112
38 *	{ R. A. 1 ^h . 22 ^m . (50 ^s). } { N. P. D. 87 ^o . 54' .. }	0.10120	0.08764	1.44852	0.08001	84.088	9.89170	0.06651	0.79559	0.19154	115.027
47 *	{ R. A. 1 ^h . 35 ^m . (20 ^s). } { N. P. D. 80 ^o . 8' .. }	0.10102	0.08896	1.44970	0.08300	83.708	9.92545	0.01839	0.82317	0.20523	114.792
52	B. A. C. 542.	0.10088	0.08934	1.44979	0.08306	83.680	9.92745	0.01742	0.83216	0.20937	114.184
53	W. B. I. 743	0.10070	0.08950	1.44958	0.08244	83.741	9.92127	0.02771	0.83721	0.21162	113.552
55	54 Ceti.	0.10073	0.08970	1.44988	0.08311	83.655	9.92973	0.01659	0.84088	0.21328	113.590
73	67 Ceti.	0.09925	0.09201	1.44686	0.07663	84.280	9.84700	0.11548	0.90636	0.23941	106.749
80	Lalande 4594.	0.10268	0.09602	1.45671	0.09298	81.830	0.07280	9.86170	0.93724	0.25031	107.381
89	35 Arietis.	0.09984	0.09579	1.45481	0.08871	82.505	0.04057	9.92670	0.97033	0.26120	104.609
93	B. A. C. 857.	0.11156	0.10609	1.46764	0.10632	78.604	0.17328	9.74645	0.97940	0.26406	101.434
94	B. A. C. 858.	0.11158	0.10617	1.46770	0.10634	78.590	0.17367	9.74668	0.98005	0.26427	101.354
104	τ ³ Eridani.	0.09782	0.09717	1.44175	0.07130	84.770	9.71562	0.17474	1.02362	0.27736	99.608
108 *	{ R. A. 3 ^h . 1 ^m . (0 ^s). } { N. P. D. 113 ^o . 3' .. }	0.09726	0.09742	1.44196	0.07189	84.737	9.71800	0.16900	1.03667	0.28109	99.234
110 *	{ R. A. 3 ^h . 2 ^m . (40 ^s). } { N. P. D. 75 ^o . 26' .. }	0.09628	0.09665	1.45208	0.08355	83.278	9.98209	0.01034	1.04041	0.28213	99.366
113	B. A. C. 1010.	0.09553	0.09672	1.44576	0.07647	84.308	9.81498	0.11742	1.05456	0.28604	99.002
124	τ ⁵ Eridani.	0.09500	0.09918	1.44159	0.07306	84.721	9.70064	0.15627	1.10020	0.29793	96.867
144	W. B. IV. 53.	0.09113	0.10046	1.45291	0.08221	83.398	9.99974	0.03264	1.18365	0.31685	87.893
145	ε ¹ Eridani.	0.09077	0.09998	1.44595	0.07771	84.311	9.81905	0.10065	1.18524	0.31719	91.720
147	ε ² Eridani.	0.09043	0.10018	1.44571	0.07760	84.348	9.81212	0.10184	1.19350	0.31884	91.344
157	B. A. C. 1394.	0.08944	0.10144	1.45356	0.08199	83.411	0.01313	0.03629	1.22271	0.32435	84.256
166	B. A. C. 1446.	0.08838	0.10173	1.44320	0.07682	84.627	9.73680	0.11205	1.24358	0.32795	89.781
187	λ Eridani.	0.08525	0.10221	1.44509	0.07823	84.570	9.79288	0.09307	1.30052	0.33607	85.335
194	τ Orionis.	0.08439	0.10230	1.44576	0.07854	84.550	9.81297	0.08858	1.31569	0.33778	83.853
200	Lalande 10096.	0.08400	0.10329	1.45451	0.08062	83.678	0.03185	0.05804	1.32519	0.33871	74.618

* For No. 7, log. e = 0.59676, log. f = 0.12279, log. g = 1.48589, log. h = 0.59667, l = - 57.457.

† For No. 24, log. e = 0.51870, log. f = 0.20780, log. g = 1.56064, log. h = 0.51857, l = - 39.020.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1850.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
203	* { R. A. 5 ^h . 17 ^m . (50 ^s). N. P. D. 63°. 33'... (r ₅)..... } Orionis.....	0.08408	0.10490	1.45824	0.08137	83.209	0.09660	0.04851	1.32871	0.33905	70.664
211	Orionis.....	0.08253	0.10257	1.44608	0.07883	84.615	9.82262	0.08440	1.34670	0.34052	81.599
212	* { R. A. 5 ^h . 28 ^m . (30 ^s). N. P. D. 96°. 1'... (r ₁)..... } Orionis.....	0.08253	0.10257	1.44608	0.07883	84.615	9.82262	0.08440	1.34670	0.34052	81.599
215	Orionis.....	0.08219	0.10251	1.44728	0.07904	84.535	9.85730	0.08131	1.35195	0.34088	80.064
222	Orionis.....	0.08124	0.10292	1.44471	0.07884	84.783	9.78098	0.08432	1.36751	0.34175	81.660
235	* { R. A. 6 ^h . 11 ^m . (40 ^s). N. P. D. 64°. 14'... (r ₁)..... } Lalande 12237.....	0.07782	0.10515	1.45811	0.07859	83.828	0.09454	0.08712	1.41530	0.34215	62.180
238	Lalande 12237.....	0.07726	0.10508	1.45802	0.07833	83.896	0.09321	0.09051	1.42278	0.34189	61.523
239	Lalande 12240.....	0.07719	0.10509	1.45806	0.07832	83.898	0.09377	0.09066	1.42303	0.34188	61.457
240	B. A. C. 2083.....	0.07197	0.15781	1.51398	0.07226	75.825	0.30877	0.10700	1.42583	0.34175	40.212
251	♂ Canis Majoris.....	0.07367	0.10428	1.43915	0.08141	85.453	9.60817	0.04751	1.46482	0.33809	82.519
257	♂ Canis Majoris.....	0.07267	0.10399	1.43939	0.08176	85.498	9.61704	0.04209	1.47592	0.33634	81.970
258	γ Canis Majoris.....	0.07298	0.10279	1.44269	0.08082	85.379	9.71927	0.05484	1.47616	0.33629	78.387
265	π Argus.....	0.06978	0.10695	1.43326	0.08472	85.734	9.45104	0.00652	1.49394	0.33269	86.357
267	β Canis Minoris.....	0.07085	0.10157	1.45118	0.07795	85.155	9.95971	0.09707	1.50213	0.33067	64.288
277	* { R. A. 7 ^h . 52 ^m . (0 ^s).. N. P. D. 36°. 50'... (q ₂)..... } Lalande 15595.....	0.05985	0.11334	1.47198	0.06378	84.320	0.21656	0.19749	1.53674	0.31867	36.073
278	Lalande 15595.....	0.06694	0.10129	1.45493	0.07499	85.348	0.04048	0.13425	1.53674	0.31867	55.131
282	ψ ² Cancri.....	0.06540	0.10175	1.45686	0.07320	85.388	0.07463	0.15266	1.54573	0.31450	51.047
284	β Cancri.....	0.06598	0.09943	1.45122	0.07699	85.701	9.96100	0.11026	1.55214	0.31117	60.952
293	ζ Hydræ.....	0.06267	0.09691	1.45001	0.07735	86.174	9.93108	0.10575	1.58416	0.28886	62.096
299	38 Lynceis.....	0.05622	0.09929	1.45884	0.06538	86.545	0.10278	0.21677	1.59941	0.27350	42.506
314	Groombridge 1626....	0.04881	0.09464	1.45745	0.05849	87.929	0.08318	0.25700	1.63015	0.22342	41.518
316	Groombridge 1635....	0.04851	0.09441	1.45735	0.05820	87.992	0.08192	0.25844	1.63114	0.22107	41.565
321	μ Hydræ.....	0.05586	0.08978	1.44570	0.08543	86.905	9.82262	9.97758	1.63482	0.21143	77.200
325	ν Hydræ.....	0.05492	0.08743	1.44635	0.08542	87.084	9.84081	9.97171	1.64256	0.18551	78.235
326	α Crateris.....	0.05428	0.08647	1.44636	0.08640	87.123	9.84436	9.96012	1.64533	0.17330	79.434
331	β Crateris.....	0.05316	0.08540	1.44623	0.08855	87.130	9.84973	9.92234	1.64804	0.15858	82.028
333	B. A. C. 3836.....	0.05502	0.08476	1.44852	0.07793	87.615	9.89164	0.09764	1.64838	0.15614	69.999
334	θ Leonis.....	0.05402	0.08497	1.44965	0.07230	87.964	9.92854	0.16797	1.64843	0.15591	62.783
336	ξ ¹ Ursæ Majoris.....	0.05036	0.08530	1.45107	0.06398	88.628	9.97726	0.23625	1.64918	0.15096	54.310
337	ξ ² Ursæ Majoris.....	0.05036	0.08530	1.45107	0.06398	88.628	9.97726	0.23625	1.64918	0.15096	54.310
338	ν Ursæ Majoris.....	0.04982	0.08539	1.45123	0.06304	88.706	9.98217	0.24176	1.64922	0.15072	53.506
342	γ Crateris.....	0.05368	0.08382	1.44709	0.08631	87.297	9.86397	9.96140	1.65041	0.14140	80.576
348	B. A. C. 3928.....	0.05040	0.08337	1.44639	0.09331	87.100	9.87567	9.83905	1.65156	0.13014	86.436

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1850.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
349	θ Crateris	0.05428	0.08245	1.44781	0.08293	87.534	9.87525	0.01930	1.65200	0.12533	77.894
350	ζ Crateris	0.05325	0.08169	1.44760	0.08670	87.407	9.87869	9.95448	1.65280	0.11377	82.144
353	93 Leonis	0.05263	0.08141	1.44895	0.06982	88.526	9.91692	0.19255	1.65302	0.10927	64.276
362	B. A. C. 4070	9.12436	0.08413	1.45239	9.13073	138.942	0.07391	0.34202	1.65374	0.08372	41.033
364	ϵ Corvi	0.05238	0.07891	1.44834	0.08872	87.456	9.90357	9.91850	1.65374	0.07534	85.455
365	γ Corvi	0.05325	0.07829	1.44847	0.08636	87.598	9.90014	9.96031	1.65365	0.06621	84.149
372	δ Corvi	0.05349	0.07676	1.44881	0.08588	87.696	9.90750	9.96894	1.65285	0.04284	84.974
380	W. B. XII. 706.	0.05390	0.07469	1.44727	0.07285	88.827	9.86587	0.16209	1.65059	0.00872	76.150
388	ϵ Virginis	0.05455	0.07331	1.44723	0.07427	88.788	9.86151	0.14555	1.64821	9.98386	79.404
392	B. A. C. 4437	0.05150	0.07083	1.45185	0.09267	87.512	9.99008	9.85249	1.64508	9.95676	92.135
393	γ Hydrae	0.05358	0.07117	1.45084	0.08854	87.725	9.96112	9.92286	1.64451	9.95233	90.880
406	ν Bootis	0.05586	0.06819	1.44559	0.07266	89.286	9.82028	0.16344	1.63440	9.88564	86.126
411	π Hydrae	0.05516	0.06578	1.45318	0.08928	87.751	0.01076	9.91325	1.62800	9.85015	95.241
414 *	{ R. A. 13 ^h . 59 ^m . (20 ^s). N. P. D. 70°. 25'	0.05638	0.06626	1.44457	0.07166	89.528	9.79525	0.17348	1.62735	9.84664	88.682
421	f Bootis	0.05759	0.06425	1.44395	0.07195	89.611	9.77629	0.17006	1.61758	9.79814	92.628
424 *	{ R. A. 14 ^h . 25 ^m . (50 ^s). N. P. D. 59°. 4'	0.05594	0.06212	1.44082	0.06739	90.410	9.71775	0.20780	1.61415	9.78226	92.109
428 *	{ R. A. 14 ^h . 29 ^m . (10 ^s). N. P. D. 26°. 1'	0.03306	0.04450	1.42178	0.03796	96.350	9.66801	0.28224	1.61239	9.77427	86.455
429 *	{ R. A. 14 ^h . 30 ^m . (10 ^s). N. P. D. 26°. 3'	0.03328	0.04434	1.42167	0.03817	96.340	9.66455	0.28157	1.61173	9.77129	86.796
430	π^1 Bootis	0.05895	0.06320	1.44429	0.07334	89.471	9.78009	0.15532	1.60975	9.76235	95.863
431	π^2 Bootis	0.05895	0.06320	1.44429	0.07334	89.471	9.78009	0.15532	1.60975	9.76235	95.863
434	109 Virginis	0.06018	0.06349	1.44767	0.07836	88.766	9.86821	0.09130	1.60679	9.74943	98.128
440	ξ^1 Bootis	0.05943	0.06200	1.44335	0.07261	89.641	9.75547	0.16264	1.60323	9.73427	97.719
441	ξ^2 Bootis	0.05943	0.06200	1.44335	0.07261	89.641	9.75547	0.16264	1.60323	9.73427	97.719
450 *	{ R. A. 15 ^h . 3 ^m . (50 ^s). N. P. D. 99°. 47'	0.06182	0.06123	1.45080	0.08206	88.306	9.95143	0.03411	1.59066	9.68324	101.791
451	W. B. XV. 74.	0.06192	0.06112	1.45082	0.08204	88.309	9.95173	0.03454	1.58948	9.67858	102.005
455 *	{ R. A. 15 ^h . 12 ^m . (0 ^s). N. P. D. 52°. 22' \pm	0.05830	0.05592	1.43623	0.06656	91.066	9.60466	0.20645	1.58453	9.65974	102.204
458 *	{ R. A. 15 ^h . 18 ^m . (20 ^s). N. P. D. 111°. 21'	0.06206	0.05900	1.45436	0.08525	87.933	0.03048	9.98423	1.57968	9.64156	102.531
461 *	{ R. A. 15 ^h . 19 ^m . (40 ^s). N. P. D. 111°. 37'	0.06215	0.05885	1.45448	0.08528	87.931	0.03274	9.98354	1.57878	9.63842	102.604
470	δ^1 Serpentis	0.06375	0.05939	1.44507	0.07627	89.144	9.79465	0.11997	1.57253	9.61590	106.296
471	δ^2 Serpentis	0.06375	0.05939	1.44507	0.07627	89.144	9.79465	0.11997	1.57253	9.61590	106.296
473	B. A. C. 5140. ....	*	...	...	...	...	9.59760	0.25895	1.57227	9.61494	99.600
478	β Serpentis	0.06448	0.05819	1.44341	0.07521	89.376	9.74714	0.13283	1.56295	9.58282	108.657
480	μ Serpentis	0.06525	0.05883	1.44913	0.08007	88.505	9.90803	0.06843	1.56079	9.57569	107.444

* For No. 473, log. e = 9.12115, log. f = -9.22134, log. g = 9.83478, log. h = 9.12356, l = 206.715.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1850.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
481	κ Serpentis	0.06452	0.05768	1.44247	0.07456	89.524	9.72068	0.14012	1.56064	9.57503	109.309
483	ϵ Serpentis	0.06536	0.05867	1.44677	0.07801	88.835	9.84292	0.09633	1.55945	9.57128	108.550
519	W. B. XVI. 790.....	0.07069	0.05512	1.44333	0.07715	89.033	9.74013	0.10800	1.50211	9.41290	119.598
535	δ Herculis.....	0.07324	0.05240	1.43874	0.07668	89.419	9.59618	0.11178	1.46890	9.35220	126.846
536	π Herculis	0.07257	0.04865	1.43278	0.07522	90.255	9.42504	0.12406	1.46770	9.35003	129.258
537	u Herculis	0.07312	0.05000	1.43441	0.07586	89.966	9.47814	0.11878	1.46520	9.34652	129.041
542	d Ophiuchi	0.07406	0.05097	1.45972	0.08170	87.479	0.11747	0.04500	1.45748	9.33624	109.676
543	ρ^1 Herculis	0.07369	0.04827	1.43247	0.07586	90.184	9.41290	0.11696	1.45653	9.33534	131.061
544	ρ^2 Herculis	0.07369	0.04827	1.43247	0.07586	90.184	9.41290	0.11696	1.45653	9.33534	131.061
558	μ Herculis.....	0.07687	0.05111	1.43724	0.07810	89.271	9.54556	0.09324	1.42645	9.30893	133.106
559	89 Herculis	0.07794	0.05148	1.43804	0.07864	89.075	9.56950	0.08649	1.41379	9.30353	134.069
565	ξ Herculis	0.07821	0.05062	1.43650	0.07871	89.224	9.52224	0.08536	1.41002	9.30253	135.386
569	67 Ophiuchi.....	0.07846	0.05434	1.44719	0.07915	88.118	9.85447	0.07974	1.40823	9.30203	126.348
570	* { R. A. 17 ^h . 54 ^m . (20 ^s) N. P. D. 45 ^o . 3'..... }	0.07833	0.04369	1.42710	0.07858	90.372	9.27068	0.08546	1.40647	9.30153	139.299
571	γ^1 Sagittarii	0.07863	0.05052	1.45983	0.07946	87.339	0.11932	0.07561	1.40482	9.30153	111.856
580	37 Draconis.....	0.08383	0.00729	1.39181	0.08352	94.373	9.05334	0.05477	1.37270	9.30649	145.444
593	* { R. A. 18 ^h . 52 ^m . (20 ^s) N. P. D. 75 ^o . 8'..... }	0.08480	0.05416	1.44287	0.08062	87.919	9.72469	0.05764	1.31092	9.35393	137.988
597	λ Aquilæ.....	0.08523	0.05509	1.45004	0.07864	87.411	9.93141	0.08721	1.30005	9.36580	128.342
600	ω Aquilæ.....	0.08660	0.05509	1.44428	0.08066	87.622	9.76881	0.05702	1.27657	9.39305	137.945
604	* { R. A. 19 ^h . 21 ^m . (10 ^s) N. P. D. 112 ^o . 14'..... }	0.08813	0.05402	1.45611	0.07575	87.000	0.06187	0.12425	1.25636	9.41832	119.687
611	κ Aquilæ.....	0.08828	0.05605	1.45072	0.07801	87.125	9.94847	0.09637	1.24108	9.43813	128.825
612	α Sagittæ	0.08911	0.05529	1.44216	0.08222	87.486	9.70574	0.03330	1.23176	9.45007	142.804
613	ρ Cygni	0.09008	0.05288	1.43724	0.08463	87.780	9.56477	0.00124	1.23167	9.45007	148.247
618	δ Sagittæ	0.08985	0.05557	1.44207	0.08253	87.400	9.70368	0.02831	1.21667	9.46967	143.544
620	η Aquilæ.....	0.08971	0.05698	1.44805	0.07930	87.082	9.87869	0.07745	1.20797	9.48113	134.271
641	γ^1 Delphini	0.09494	0.05953	1.44381	0.08348	86.578	9.76030	0.01180	1.08383	9.63666	144.530
642	γ^2 Delphini	0.09494	0.05953	1.44381	0.08348	86.578	9.76030	0.01180	1.08383	9.63666	144.530
643	ϵ Cygni.....	0.09739	0.05647	1.43768	0.08930	86.661	9.61931	9.92724	1.08277	9.63789	153.071
658	* { R. A. 21 ^h . 17 ^m N. P. D. 92 ^o . 52'..... }	0.09711	0.06313	1.44893	0.07827	86.151	9.90249	0.09258	0.99238	9.73728	133.643
660	* { R. A. 21 ^h . 24 ^m N. P. D. 85 ^o . 35'..... }	0.09761	0.06368	1.44725	0.08062	86.045	9.85655	0.05697	0.97383	9.75636	137.964
661	W. B. XXI. 571.....	0.09763	0.06373	1.44719	0.08071	86.039	9.85503	0.05564	0.97283	9.75735	138.108
665	B. A. C. 7504.....	0.30952	9.73788	1.17610	0.30918	76.394	9.74817	9.61513	0.96234	9.76787	160.042
671	* { R. A. 21 ^h . 38 ^m . (40 ^s) N. P. D. 81 ^o . 13'..... }	0.09867	0.06484	1.44640	0.08221	85.846	9.83423	0.03158	0.93648	9.79353	140.138
674	* { R. A. 21 ^h . 45 ^m . (20 ^s) N. P. D. 24 ^o . 49'..... }	0.12457	0.04609	1.42272	0.12058	84.135	9.71147	9.64793	0.91952	9.80998	159.910

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		e	f	g	h		e'	f'	g'	h'	
675	16 Pegasi.....	0.10088	0.06424	1.44286	0.08857	85.552	9.75790	9.92657	0.91730	9.81220	148.430
676	* { R. A. 21 ^h . 46 ^m . (30 ^s). N. P. D. 24 ^o . 34' ... }	0.12513	0.04603	1.42262	0.12116	84.058	9.71533	9.64399	0.91649	9.81280	159.859
677	* { R. A. 21 ^h . 51 ^m . (40 ^s). N. P. D. 78 ^o . 36' ... }	0.09957	0.06593	1.44603	0.08328	85.661	9.82569	0.01391	0.90341	9.82534	141.122
681	18 Cephei.....	0.12202	0.05221	1.42792	0.11735	83.796	9.74332	9.63736	0.88411	9.84364	158.678
682	1 Pegasi.....	0.10158	0.06571	1.44349	0.08866	85.348	9.77619	9.92389	0.88252	9.84515	147.429
694	* { R. A. 22 ^h . 17 ^m . (20 ^s). N. P. D. 24 ^o . 3' ... }	0.12951	0.05273	1.42769	0.12536	82.594	9.79750	9.57635	0.84036	9.88457	157.418
700	B. A. C. 7854.....	0.29486	9.93485	1.32810	0.29431	64.410	9.88331	9.45843	0.82237	9.90171	155.802
721	W. B. XXIII. 487...	0.10264	0.07537	1.44777	0.08273	84.704	9.87367	0.02283	0.71511	0.01868	132.635
722	* { R. A. 23 ^h . 25 ^m . (50 ^s). N. P. D. 80 ^o . 47' ... }	0.10271	0.07554	1.44775	0.08303	84.669	9.87373	0.01771	0.71320	0.02180	132.780
724	* { R. A. 23 ^h . 29 ^m . (10 ^s). N. P. D. 84 ^o . 55' ... }	0.10255	0.07592	1.44802	0.08099	84.774	9.87835	0.04608	0.70972	0.02771	130.512
726	W. B. XXIII. 644...	0.10291	0.07608	1.44774	0.08383	84.560	9.87495	0.00414	0.70778	0.03121	133.029
732	* { R. A. 23 ^h . 45 ^m . (0 ^s). N. P. D. 75 ^o . 42' ... }	0.10335	0.07755	1.44791	0.08527	84.313	9.88264	9.97920	0.69789	0.05484	132.739
733	* { R. A. 23 ^h . 49 ^m . (20 ^s). N. P. D. 85 ^o . 20' ... }	0.10272	0.07806	1.44817	0.08116	84.591	9.88281	0.04873	0.69628	0.06176	128.160
734	W. B. XXIII. 1032..	0.10272	0.07812	1.44818	0.08110	84.590	9.88304	0.04940	0.69588	0.06339	128.004
737	B. A. C. 8336.....	0.32747	0.06818	1.43886	0.32695	41.572	0.05557	9.30796	0.69507	0.06728	141.361
741	W. B. XXIII. 1208..	0.10314	0.07904	1.44828	0.07419	84.964	9.88986	0.14655	0.69426	0.07709	119.775
742	W. B. XXIII. 1227..	0.10316	0.07912	1.44826	0.07409	84.966	9.88958	0.14787	0.69426	0.07866	119.572

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS

AND

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES,

(The Right Ascensions corrected for the Errors of the Assumed Semidiameters of the Sun, the Moon, Venus, and Mars; and the North Polar Distances corrected for the Errors of the Zenith Points obtained by observation of the Reflected Image of the Wire, for the Discordance of Direct Results and Reflexion Results, for the Errors of the Assumed Semidiameters of the Sun and Moon, and for the Alteration in the Moon's Tabular Parallax)

OF THE

SUN, MOON, AND PLANETS,

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC:

WITH

THE INFERRED POSITION OF THE ECLIPTIC; THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE.

1850.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN, corrected for Refraction and Parallax: compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1850.	m s	s	s	' "	"	"	1850.	m s	s	s	' "	"	"
Jan. 5	2. 21'74	21'60	-0'14	32. 40'25	34'40	-5'85	July 23	2. 14'81	14'72	-0'09	31. 34'13	32'20	-1'93
30	2. 17'12	16'86	-0'26	32. 29'82	30'20	+0'38	24	2. 14'88	14'56	-0'32	31. 36'96	32'40	-4'56
Feb. 4	2. 16'01	15'68	-0'33	32. 30'23	28'80	-1'43	Aug. 5	2. 12'49	12'48	-0'01	31. 38'13	35'20	-2'93
5	2. 15'69	15'44	-0'25				13	2. 10'99	11'16	+0'17			
7	2. 15'00	14'98	-0'02	32. 29'18	27'60	-1'58	16	2. 10'86	10'68	-0'18	31. 40'08	38'80	-1'28
13	2. 13'72	13'66	-0'06	32. 32'65	25'40	-7'25	17	2. 10'52	10'54	+0'02	31. 40'98	39'20	-1'78
16	2. 13'04	13'04	0'00	32. 24'23	24'20	-0'03	20	2. 10'43	10'10	-0'33	31. 44'04	40'40	-3'64
18	2. 12'73	12'64	-0'09	32. 23'59	23'40	-0'19	23	2. 9'73	9'70	-0'03	31. 46'49	41'60	-4'89
27	2. 11'22	11'02	-0'20	32. 20'21	19'40	-0'81	26	2. 9'34	9'34	0'00	31. 41'06	42'80	+1'74
March 1	2. 10'73	10'70	-0'03				27	2. 9'21	9'22	+0'01			
5	2. 10'03	10'14	+0'11	32. 20'67	16'40	-4'27	28	2. 8'98	9'10	+0'12	31. 49'24	43'60	-5'64
6	2. 10'06	10'02	-0'04	32. 18'23	15'80	-2'43	30	2. 8'91	8'90	-0'01	31. 51'11	44'60	-6'51
12	2. 9'47	9'38	-0'09	32. 17'76	12'60	-5'16	Sep. 7	2. 8'71	8'28	-0'43	31. 50'04	48'40	-1'64
18	2. 9'10	8'98	-0'12	32. 11'15	9'40	-1'75	12	2. 8'15	8'06	-0'09			
26	2. 8'79	8'76	-0'03	32. 4'58	5'20	+0'62	13				31. 50'88	51'40	+0'52
27	2. 8'74	8'76	+0'02	32. 10'58	4'60	-5'98	14	2. 8'20	8'02	-0'18	31. 55'35	52'00	-3'35
28	2. 9'11	8'76	-0'35	32. 6'14	4'00	-2'14	18	2. 8'38	8'00	-0'38			
April 5	2. 9'49	9'02	-0'47				25	2. 8'36	8'18	-0'18			
24	2. 10'97	10'92	-0'05	31. 55'03	49'40	-5'63	27	2. 8'24	8'30	+0'06	31. 60'50	58'80	-1'70
27	2. 11'44	11'34	-0'10	31. 51'37	48'00	-3'37	28	2. 8'20	8'36	+0'16	31. 59'72	59'40	-0'32
30	2. 12'16	11'78	-0'38	31. 52'34	46'60	-5'74	30	2. 8'81	8'50	-0'31	32. 0'21	0'40	+0'19
May 3				31. 49'10	45'20	-3'90	Oct. 1	2. 8'52	8'56	+0'04			
10	2. 13'31	13'38	+0'07	31. 44'86	42'00	-2'86	7				32. 7'03	4'40	-2'63
13	2. 14'07	13'88	-0'19	31. 42'57	40'80	-1'77	8				32. 12'41	4'80	-7'61
20	2. 15'11	15'02	-0'09	31. 41'35	38'20	-3'15	9				32. 7'01	5'40	-1'61
21	2. 15'61	15'16	-0'45	31. 40'34	37'80	-2'54	10	2. 9'78	9'60	-0'18	32. 2'92	6'00	+3'08
25	2. 15'98	15'76	-0'22	31. 40'63	36'40	-4'23	12	2. 10'13	9'88	-0'25			
29	2. 16'42	16'28	-0'14				15	2. 10'19	10'34	+0'15	32. 9'48	8'80	-0'68
June 1	2. 16'80	16'64	-0'16	31. 38'78	34'40	-4'38	16	2. 10'83	10'52	-0'31	32. 14'66	9'40	-5'26
3	2. 17'00	16'86	-0'14	31. 36'65	33'80	-2'85	18	2. 11'00	10'88	-0'12			
4	2. 17'20	16'96	-0'24	31. 38'04	33'60	-4'44	21	2. 11'56	11'42	-0'14	32. 18'28	12'00	-6'28
5	2. 17'24	17'06	-0'18	31. 35'82	33'40	-2'42	22	2. 11'49	11'62	+0'13	32. 15'05	12'60	-2'45
7	2. 17'42	17'22	-0'20	31. 37'65	32'80	-4'85	28	2. 12'65	12'86	+0'21			
10	2. 17'55	17'46	-0'09	31. 39'31	32'20	-7'11	29				32. 17'41	16'20	-1'21
17	2. 17'63	17'76	+0'13				Nov. 6	2. 14'93	14'90	-0'03	32. 21'58	20'00	-1'58
18	2. 17'70	17'78	+0'08	31. 28'48	31'00	+2'52	7				32. 21'04	20'60	-0'44
20	2. 17'94	17'80	-0'14	31. 33'29	30'80	-2'49	8	2. 15'40	15'38	-0'02	32. 20'28	21'00	+0'72
21	2. 17'84	17'80	-0'04	31. 35'54	30'80	-4'74	11	2. 16'06	16'10	+0'04	32. 21'76	22'40	+0'64
22	2. 18'10	17'80	-0'30	31. 30'48	30'60	+0'12	12	2. 16'48	16'34	-0'14	32. 23'73	22'80	-0'93
24	2. 18'27	17'76	-0'51	31. 32'61	30'60	-2'01	13				32. 23'78	23'20	-0'58
25	2. 17'85	17'74	-0'11	31. 36'28	30'40	-5'88	14	2. 17'08	16'82	-0'26	32. 26'39	23'80	-2'59
26	2. 17'96	17'70	-0'26	31. 34'04	30'40	-3'64	25	2. 19'40	19'30	-0'10	32. 30'33	28'00	-2'33
27	2. 17'38	17'66	+0'28	31. 34'58	30'40	-4'18	28	2. 20'10	19'88	-0'22	32. 31'34	28'80	-2'54
July 1				31. 29'77	30'20	+0'43	29	2. 20'07	20'06	-0'01	32. 30'35	29'20	-1'15
5	2. 17'22	17'10	-0'12	31. 30'83	30'20	-0'63	Dec. 6	2. 21'41	21'24	-0'17	32. 26'17	31'20	+5'03
12	2. 16'54	16'34	-0'20	31. 29'64	30'60	+0'96	16	2. 22'35	22'26	-0'09	32. 34'11	33'40	-0'71
13	2. 16'33	16'20	-0'13				18	2. 22'28	22'36	+0'08	32. 33'08	33'60	+0'52
15	2. 16'34	15'92	-0'42	31. 33'73	30'80	-2'93	19	2. 22'56	22'40	-0'16	32. 30'20	33'80	+3'60
16	2. 15'51	15'78	+0'27	31. 32'55	31'00	-1'55	20	2. 22'35	22'42	+0'07			
17	2. 15'96	15'64	-0'32	31. (42'13)	31'20	(-10'93)	21	2. 22'39	22'44	+0'05	32. 33'77	34'00	+0'23
22	2. 15'01	14'88	-0'13	31. 35'08	32'00	-3'08	23	2. 22'36	22'44	+0'08	32. 30'35	34'20	+3'85
							28	2. 22'39	22'30	-0'09	32. 35'69	34'40	-1'29

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1850.	m s	s	s	' "	"	"	1850.	m s	s	s	' "	"	"
Jan. 26				33. 24'64	21'94	- 2'70	July 21				29. 39'79	32'36	- 7'43
Feb. 21				32. 38'78	34'68	- 4'10	22				29. 33'62	26'16	- 7'46
22				32. 50'90	49'92	- 0'98	25				29. 35'16	27'12	- 8'04
23				32. 55'92	58'64	+ 2'72	Aug. 18				29. 34'93	30'18	- 4'75
Mar. 27	2. 12'35	12'52	+0'17	31. 56'77	50'62	- 6'15	19				29. 34'58	25'42	- 9'16
28				31. 33'16	28'22	- 4'94	21				29. 31'31	27'70	- 3'61
29				31. 8'02	3'96	- 4'06	22	2. 5'61	5'60	-0'01	29. 39'28	33'86	- 5'42
Apr. 2				29. 45'82	43'48	- 2'34	23				29. 47'63	42'76	- 4'87
28				30. 11'73	8'56	- 3'17	Sep. 14				29. 44'89	35'90	- 8'99
29				29. 53'71	52'94	- 0'77	21				30. 14'03	11'20	- 2'83
May 27				29. 48'00	42'92	- 5'08	Oct. 11				29. 52'56	57'66	+ 5'10
28				29. 45'02	34'52	-10'50	20	2. 8'26	8'58	+0'32	...	...	...
June 23				29. (61'75)	40'78	(-20'97)	21				31. 13'39	8'20	- 5'19
24				29. 38'89	32'30	- 6'59	22				31. 28'17	25'72	- 2'45
							Dec. 19				32. 57'27	51'34	- 5'93

VERTICAL DIAMETERS of VENUS, compared with those of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1850.	"	"	"	1850.	"	"	"
Aug. 13	18'30	15'20	- 3'10	Oct. 21	33'18	29'60	- 3'58
20	19'66	16'00	- 3'66	Nov. 11	49'76	40'60	- 9'16
22	18'38	16'20	- 2'18	28	58'14	53'40	- 4'74
23	19'94	16'40	- 3'54	29	58'76	54'20	- 4'56
Oct. 15	30'22	27'40	- 2'82	Dec. 6	67'86	59'20	- 8'66

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of MARS; and VERTICAL DIAMETERS of MARS:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1850.	s	s	s	"	"	"	1850.	s	s	s	"	"	"
Jan. 4	1'08	1'04	-0'04	16'94	14'00	-2'94	Feb. 6				11'92	10'20	-1'72
5	1'31	1'02	-0'29	18'32	13'80	-4'52	7				15'98	10'20	-5'78
7	1'17	1'02	-0'15	18'20	13'60	-4'60	9				13'58	10'00	-3'58
23	1'01	0'88	-0'13	13'16	11'80	-1'36	13				12'78	9'60	-3'18
30	0'77	0'82	+0'05	14'48	11'00	-3'48	16				10'28	9'20	-1'08

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1850.	"	"	"	"	"	"	1850.	"	"	"	"	"	"
Jan. 4	2'66	2'66	0'00	36'58	37'00	+0'42	Mar. 25	3'04	3'00	-0'04	43'40	41'40	-2'00
7	2'74	2'68	-0'06	41'48	37'40	-4'08	27	2'95	2'98	+0'03	...	...	...
23	2'42	2'82	+0'40	40'04	39'20	-0'84	28	3'16	2'98	-0'18	41'80	41'20	-0'60
30	2'70	2'86	+0'16	39'56	39'80	+0'24							
Feb. 6	2'95	2'94	-0'01	41'16	40'40	-0'76	Apr. 2	3'08	2'96	-0'12	42'32	40'80	-1'52
7	3'05	2'94	-0'11	42'86	40'60	-2'26	5	3'10	2'94	-0'16	42'32	40'60	-1'72
9	2'83	2'94	+0'11	43'82	40'60	-3'22	18	2'89	2'86	-0'03	39'50	39'60	+0'10
16	3'18	2'98	-0'20	42'76	41'20	-1'56	20	2'76	2'86	+0'10	41'16	39'40	-1'76
20	3'21	3'00	-0'21	42'92	41'40	-1'52	22	2'95	2'84	-0'11	39'62	39'20	-0'42
22	3'00	3'00	0'00	43'56	41'40	-2'16	24	2'81	2'82	+0'01	40'84	39'00	-1'84
26	2'81	3'00	+0'19	43'82	41'60	-2'22	25	2'89	2'82	-0'07	41'22	39'00	-2'22
Mar. 4	3'13	3'00	-0'13	43'56	41'60	-1'96	26	2'73	2'80	+0'07	41'48	38'80	-2'68
5	2'93	3'02	+0'09	44'30	41'80	-2'50	27	2'58	2'80	+0'22	39'50	38'60	-0'90
6	3'08	3'02	-0'06	40'94	41'80	+0'86	May 2	2'94	2'76	-0'18	39'94	38'20	-1'74
11	3'38	3'02	-0'36	45'46	41'80	-3'66	13	2'53	2'66	+0'13	36'20	37'00	+0'80
12	3'11	3'02	-0'09	43'66	41'80	-1'86							
15	2'91	3'02	+0'11	44'40	41'60	-2'80	Dec. 15	2'46	2'30	-0'16	35'24	31'80	-3'44
16	3'10	3'02	-0'08	41'96	41'60	-0'36	16	2'39	2'30	-0'09	34'98	31'80	-3'18
21	3'26	3'02	-0'24	41'16	41'60	+0'44	17	2'32	2'32	0'00	33'96	32'00	-1'96
23	2'84	3'00	+0'16	42'76	41'40	-1'36	27	2'35	2'38	+0'03	35'78	33'00	-2'78
							29	2'33	2'40	+0'07	34'88	33'20	-1'68

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN; and VERTICAL DIAMETERS of SATURN :
compared with those of the Nautical Almanac.

Jan. 7	1'06	1'14	+0'08	15'70	15'60	-0'10	Oct. 15	1'27	1'30	+0'03	19'70	18'00	-1'70
Aug. 18	1'23	1'24	+0'01	20'66	17'20	-3'46	16	1'22	1'30	+0'08	...	...	...
19	1'43	1'24	-0'19	19'16	17'20	-1'96	21	1'38	1'30	-0'08	20'82	18'00	-2'82
21	1'16	1'24	+0'08	...	...	...	26	1'09	1'30	+0'21	21'20	18'00	-3'20
26	0'86	1'24	+0'38	18'90	17'40	-1'50	28	1'37	1'28	-0'09	20'82	17'80	-3'02
29	...	...	...	20'66	17'40	-3'26	29	1'24	1'28	+0'04	19'66	17'80	-1'86
30	1'21	1'24	+0'03	...	...	...				
Sep. 2	1'24	1'26	+0'02	18'64	17'60	-1'04	Nov. 2	1'25	1'28	+0'03	19'32	17'80	-1'52
6	1'25	1'26	+0'01	18'52	17'60	-0'92	4	1'56	1'28	-0'28	19'16	17'80	-1'36
7	1'31	1'26	-0'05	19'16	17'60	-1'56	8	1'19	1'28	+0'09	...	...	...
10	1'41	1'26	-0'15	...	...	...	11	1'12	1'26	+0'14	22'26	17'60	-4'66
11	1'33	1'28	-0'05	17'68	17'80	+0'12	12	1'55	1'26	-0'29	19'80	17'60	-2'20
12	1'28	1'28	0'00	21'20	17'80	-3'40	14	1'32	1'26	-0'06	20'34	17'60	-2'74
13	1'26	1'28	+0'02	20'50	17'80	-2'70	23	1'24	1'26	+0'02	20'88	17'40	-3'48
14	1'33	1'28	-0'05	19'80	17'80	-2'00	25	1'16	1'26	+0'10	21'40	17'40	-4'00
25	1'12	1'30	+0'18	19'60	18'00	-1'60	27	1'64	1'24	-0'40	20'88	17'20	-3'68
28	1'33	1'30	-0'03	20'76	18'00	-2'76	28	1'32	1'24	-0'08	20'82	17'20	-3'62
30	1'23	1'30	+0'07	21'08	18'00	-3'08	29	1'19	1'24	+0'05	19'86	17'20	-2'66
Oct. 1	1'30	1'30	0'00	18'64	18'00	-0'64	Dec. 5	1'27	1'24	-0'03	18'90	17'00	-1'90
5	1'21	1'30	+0'09	21'72	18'00	-3'72	7	1'42	1'24	-0'18	18'96	17'00	-1'96
7	1'17	1'30	+0'13	21'94	18'00	-3'94	12	1'02	1'22	+0'20	17'88	16'80	-1'08
11	1'17	1'30	+0'13	23'16	18'00	-5'16	19	1'22	1'20	-0'02	22'94	16'60	-6'34
12	1'09	1'30	+0'21	21'04	18'00	-3'04	20	1'20	1'20	0'00	...	...	...
							23	1'09	1'18	+0'09	18'20	16'60	-1'60

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Errors of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Jan. 5. 0. 5. 41.5	19. 4. 36.08	36.11	+ 0.03	112. 37. 34.24	32.20	- 2.04
30. 0. 13. 36.6	20. 51. 6.31	6.16	- 0.15	107. 39. 61.53	59.90	- 1.63
Feb. 4. 0. 14. 13.4	21. 11. 26.02	26.27	+ 0.25	106. 13. 54.98	55.10	+ 0.12
5. 0. 14. 18.8	21. 15. 27.97	27.88	- 0.09	105. 55. 51.50	50.00	- 1.50
7. 0. 14. 26.7	21. 23. 28.98	28.71	- 0.27	105. 18. 52.29	51.00	- 1.29
13. 0. 14. 30.8	21. 47. 12.47	12.41	- 0.06	103. 21. 56.13	53.50	- 2.63
16. 0. 14. 22.8	21. 58. 54.13	53.95	- 0.18	102. 20. 23.16	32.20	+ 0.04
18. 0. 14. 13.8	22. 6. 38.11	37.95	- 0.16	101. 38. 24.54	23.60	- 0.94
27. 0. 12. 59.8	22. 40. 52.98	52.68	- 0.30	98. 21. 14.19	13.70	- 0.49
March 1. 0. 12. 36.9	22. 48. 23.10	22.78	- 0.32	.....	...	...
5. 0. 11. 45.2	23. 3. 17.45	17.14	- 0.31	96. 3. 59.48	60.40	+ 0.92
6. 0. 11. 31.1	23. 6. 59.84	59.63	- 0.21	95. 40. 45.03	48.30	+ 3.27
12. 0. 9. 59.2	23. 29. 7.04	6.86	- 0.18	93. 20. 11.18	11.70	+ 0.52
18. 0. 8. 16.7	23. 51. 3.54	3.48	- 0.06	90. 58. 12.15	11.40	- 0.75
26. 0. 5. 50.7	0. 20. 9.59	9.12	- 0.47	87. 49. 4.34	3.70	- 0.64
27. 0. 5. 31.7	0. 23. 47.09	47.00	- 0.09	87. 25. 34.61	34.40	- 0.21
28. 0. 5. 13.3	0. 27. 25.19	24.89	- 0.30	87. 2. 7.06	8.20	+ 1.14
April 5. 0. 2. 47.5	0. 56. 31.37	31.00	- 0.37	.....	...	...
23. 23. 58. 4.5	2. 6. 42.09	41.84	- 0.25	77. 9. 51.96	51.60	- 0.36
24. 23. 57. 53.2	2. 10. 27.34	27.27	- 0.07	76. 50. (8.93)	12.00	(+ 3.07)
26. 23. 57. 32.5	2. 17. 59.68	59.59	- 0.09	76. 11. 33.27	32.00	- 1.27
29. 23. 57. 5.4	2. 29. 22.27	21.91	- 0.36	75. 15. 15.24	14.80	- 0.44
May 2. 23. 56. 42.9	2. 40. 49.26	49.12	- 0.14	74. 21. 8.74	7.90	- 0.84
9. 23. 56. 10.7	3. 7. 52.91	52.79	- 0.12	72. 24. 3.77	5.50	+ 1.73
12. 23. 56. 5.6	3. 19. 37.39	37.37	- 0.02	71. 38. 12.84	13.30	+ 0.46
19. 23. 56. 13.5	3. 47. 21.27	21.03	- 0.24	70. 2. 11.80	12.30	+ 0.50
20. 23. 56. 16.7	3. 51. 20.96	20.85	- 0.11	69. 49. 50.05	49.00	- 1.05
24. 23. 56. 35.1	4. 7. 25.69	25.32	- 0.37	69. 3. 45.54	44.80	- 0.74
28. 23. 57. 1.2	4. 23. 38.14	37.77	- 0.37	68. 23. 25.88	26.00	+ 0.12
30. 23. 57. 16.8	.....	...	...	68. 5. 31.65	30.30	- 1.35
31. 23. 57. 25.6	4. 35. 52.22	52.01	- 0.21	67. 57. 8.91	6.50	- 2.41
June 2. 23. 57. 44.1	4. 44. 3.88	3.66	- 0.22	67. 41. 30.88	27.90	- 2.98
3. 23. 57. 54.2	4. 48. 10.53	10.09	- 0.44	67. 34. 14.69	13.40	- 1.29
4. 23. 58. 4.1	4. 52. 17.07	16.89	- 0.18	67. 27. 24.22	22.40	- 1.82
6. 23. 58. 25.9	5. 0. 32.04	31.53	- 0.51	67. 14. 52.49	51.40	- 1.09
9. 23. 59. 0.0	5. 12. 55.90	55.74	- 0.16	66. 59. 7.15	4.30	- 2.85
11. 23. 59. 24.5	5. 21. 13.38	13.09	- 0.29	66. 50. 35.70	34.10	- 1.60
17. 0. 0. 27.3	5. 41. 59.36	59.19	- 0.17	66. 36. 30.82	27.80	- 3.02
18. 0. 0. 40.3	5. 46. 8.94	8.67	- 0.27	66. 34. 52.84	52.70	- 0.14
20. 0. 1. 5.9	5. 54. 27.74	27.72	- 0.02	66. 32. 59.27	57.00	- 2.27
21. 0. 1. 19.0	5. 58. 37.40	37.24	- 0.16	66. 32. 36.76	36.30	- 0.46
22. 0. 1. 31.8	6. 2. 46.82	46.73	- 0.09	66. 32. 42.17	40.50	- 1.67
24. 0. 1. 57.7	6. 11. 5.83	5.54	- 0.29	66. 34. 5.05	3.30	- 1.75
25. 0. 2. 10.1	6. 15. 14.88	14.82	- 0.06	66. 35. 21.16	21.90	+ 0.74
26. 0. 2. 23.0	6. 19. 24.40	23.99	- 0.41	66. 37. 4.96	5.20	+ 0.24
27. 0. 2. 35.4	6. 23. 33.31	33.03	- 0.28	66. 39. 12.50	13.10	+ 0.60
July 1. 0. 3. 23.6	6. 40. 7.93	7.52	- 0.41	66. 51. 51.59	50.10	- 1.49
5. 0. 4. 8.0	6. 56. 38.65	38.38	- 0.27	67. 10. 56.91	55.50	- 1.41
12. 0. 5. 12.7	7. 25. 19.43	19.36	- 0.07	67. 59. 31.36	30.50	- 0.86
13. 0. 5. 20.4	7. 29. 23.68	23.51	- 0.17	68. 7. 61.55	59.00	- 2.55
15. 0. 5. 34.0	7. 37. 30.55	30.35	- 0.20	68. 26. 3.56	3.20	- 0.36
16. 0. 5. 40.0	7. 41. 32.99	33.00	+ 0.01	68. 35. 40.50	38.40	- 2.10

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER—*continued.*

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
July 17. o. 5. 46.0	7. 45. 35.14	35.12	— 0.02	68. 45. 35.12	35.50	+ 0.38
19. o. 5. 55.4	7. 53. 38.16	37.72	— 0.44	69. 6. 35.21	34.30	— 0.91
22. o. 6. 5.1	8. 5. 37.58	37.38	— 0.20	69. 40. 42.53	40.40	— 2.13
23. o. 6. 7.2	8. 9. 36.24	36.12	— 0.12	69. 52. 44.01	43.60	— 0.41
24. o. 6. 8.8	8. 13. 34.40	34.29	— 0.11	70. 5. 9.38	6.90	— 2.48
Aug. 5. o. 5. 36.3	9. 0. 26.99	26.69	— 0.30	72. 58. 27.92	25.90	— 2.02
13. o. 4. 38.4	9. 30. 54.78	54.74	— 0.04	.....	...	...
16. o. 4. 4.7	9. 42. 10.66	10.77	+ 0.11	76. 12. 24.86	24.40	— 0.46
17. o. 3. 52.6	9. 45. 55.02	55.02	0.00	76. 31. 27.24	27.40	+ 0.16
20. o. 3. 12.7	9. 57. 4.72	4.65	— 0.07	77. 29. 52.78	51.90	— 0.88
23. o. 2. 28.5	10. 8. 10.08	9.92	— 0.16	78. 30. 2.49	3.20	+ 0.71
26. o. 1. 45.5	10. 19. 11.40	11.28	— 0.12	79. 31. 53.19	52.90	— 0.29
27. o. 1. 23.7	10. 22. 51.28	50.95	— 0.33	79. 52. 48.23	49.90	+ 1.67
28. o. 1. 6.2	10. 26. 30.36	30.25	— 0.11	80. 13. 57.03	56.70	— 0.33
30. o. 0. 30.8	10. 33. 47.98	47.84	— 0.14	80. 56. 39.24	38.20	— 1.04
Sep. 3. 23. 58.56.9	10. 51. 56.56	56.59	+ 0.03	.....	...	...
6. 23. 57. 57.9	11. 2. 47.06	46.86	— 0.20	83. 52. 53.07	49.30	— 3.77
11. 23. 56. 15.5	11. 20. 47.10	46.91	— 0.19	85. 46. 26.76	25.80	— 0.96
12. 23. 55. 54.5	11. 24. 22.60	22.51	— 0.09	86. 9. 26.69	23.60	— 3.09
13. 23. 55. 33.4	11. 27. 57.99	58.01	+ 0.02	86. 32. 27.31	25.40	— 1.91
17. 23. 54. 8.9	11. 42. 19.55	19.44	— 0.11	88. 5. 5.48	6.50	+ 1.02
24. 23. 51. 42.5	12. 7. 28.60	28.37	— 0.23	90. 48. 42.19	38.30	— 3.89
26. 23. 51. 1.8	12. 14. 40.81	40.75	— 0.06	91. 35. 29.18	27.80	— 1.38
27. 23. 50. 42.0	12. 18. 17.59	17.26	— 0.33	91. 58. 54.37	51.90	— 2.47
29. 23. 50. 3.2	12. 25. 31.25	31.05	— 0.20	92. 45. 37.49	37.50	— 0.19
30. 23. 49. 43.2	12. 29. 8.27	8.37	+ 0.10	93. 8. 59.10	57.80	— 1.30
Oct. 4. 23. 47. 25.7	12. 43. 41.07	40.82	— 0.25	.....	...	...
6. 23. 47. 55.3	12. 50. 59.33	59.20	— 0.13	95. 28. 10.53	7.50	— 3.03
7. 23. 47. 38.4	12. 54. 39.00	38.99	— 0.01	95. 51. 6.28	6.70	+ 0.42
8. 23. 47. 22.1	.....	...	...	96. 14. 1.28	1.30	+ 0.02
9. 23. 47. 6.4	13. 1. 60.01	59.84	— 0.17	96. 36. 56.07	50.90	— 5.17
11. 23. 46. 36.0	13. 9. 22.62	22.51	— 0.11	97. 22. 16.97	13.70	— 3.27
14. 23. 45. 54.3	13. 20. 30.45	30.19	— 0.26	98. 29. 30.39	30.90	+ 0.51
15. 23. 45. 41.2	13. 24. 13.90	13.82	— 0.08	98. 51. 46.93	42.50	— 4.43
17. 23. 45. 17.1	13. 31. 42.79	42.78	— 0.01	99. 35. 43.94	42.50	— 1.44
20. 23. 44. 45.4	13. 43. 0.65	0.78	+ 0.13	100. 40. 40.01	38.30	— 1.71
21. 23. 44. 36.4	13. 46. 48.17	48.08	— 0.09	101. 1. 60.90	58.40	— 2.50
27. 23. 43. 56.0	14. 9. 46.88	46.84	— 0.04	103. 6. 21.63	17.60	— 4.03
28. 23. 43. 52.0	14. 13. 39.58	39.27	— 0.31	103. 26. 22.45	20.30	— 2.15
Nov. 5. 23. 43. 47.6	14. 45. 7.61	7.71	+ 0.10	105. 58. 36.44	32.50	— 3.94
6. 23. 43. 51.1	14. 49. 7.64	7.46	— 0.18	106. 16. 28.31	26.40	— 1.91
7. 23. 43. 55.2	14. 53. 8.32	8.05	— 0.27	106. 34. 4.81	3.90	— 0.91
10. 23. 44. 12.1	15. 5. 14.96	14.80	— 0.16	107. 25. 15.89	13.80	— 2.09
11. 23. 44. 19.6	15. 9. 18.95	18.72	— 0.23	107. 41. 44.29	41.50	— 2.79
12. 23. 44. 27.5	.....	...	...	107. 57. 54.23	50.60	— 3.63
13. 23. 44. 36.7	15. 17. 29.22	29.04	— 0.18	108. 13. 43.71	40.80	— 2.91
24. 23. 47. 9.8	16. 3. 24.90	24.81	— 0.09	110. 45. 22.51	20.00	— 2.51
27. 23. 48. 8.4	16. 16. 13.30	13.10	— 0.20	111. 18. 57.91	54.00	— 3.91
28. 23. 48. 29.2	16. 20. 30.77	30.67	— 0.10	111. 29. 21.54	17.50	— 4.04
Dec. 5. 23. 51. 14.3	16. 50. 52.18	51.99	— 0.19	112. 30. 21.17	20.10	— 1.07
15. 23. 55. 50.8	17. 34. 55.02	54.91	— 0.11	113. 19. 56.78	54.80	— 1.98
17. 23. 56. 49.7	17. 43. 47.16	46.96	— 0.20	113. 24. 18.39	17.20	— 1.19
18. 23. 57. 19.5	17. 48. 13.59	13.25	— 0.34	113. 25. 43.49	46.20	+ 2.71

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Dec. 19. 23. 57. 49.2	17. 52. 39.93	39.65	— 0.28	.....	...	...
20. 23. 58. 19.1	17. 57. 6.48	6.14	— 0.34	113. 27. 18.44	19.40	+ 0.96
22. 23. 58. 48.8	18. 5. 59.52	59.25	— 0.27	113. 26. 60.31	59.50	— 0.81
28. 0. 1. 47.8	18. 28. 11.72	11.48	— 0.24	113. 17. 56.91	55.00	— 1.91

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER.

Jan.	1. 15. 27. 37.3	10. 13. 17.08	17.81	+ 0.73	78. 20. 29.15	27.00	— 2.15
	4. 17. 57. 4.4	12. 54. 58.39	59.16	+ 0.77	91. 39. 14.60	14.10	— 0.50
	5. 18. 42. 54.3	13. 44. 52.31	53.03	+ 0.72	95. 57. 4.95	3.10	— 1.85
	6. 19. 28. 9.5	14. 34. 11.57	12.12	+ 0.55	99. 51. 56.49	56.90	+ 0.41
	23. 8. 4. 46.5	4. 15. 57.79	58.06	+ 0.27	73. 56. 20.07	19.10	— 0.97
	26. 11. 7. 51.5	7. 31. 22.49	23.53	+ 1.04	71. 3. 4.77	1.40	— 3.37
	30. 14. 58. 42.8	11. 38. 37.98	38.80	+ 0.82	84. 51. 42.01	43.20	+ 1.19
Feb.	1. 16. 36. 48.3	13. 24. 52.70	53.31	+ 0.61	94. 7. 25.73	26.30	+ 0.57
	3. 18. 9. 54.1	15. 5. 56.85	57.53	+ 0.68	101. 59. 57.44	64.60	+ 7.16
	5. 19. 42. 30.8	16. 46. 51.91	52.15	+ 0.24	107. 20. 22.46	30.80	+ 8.34
	16. 3. 27. 52.3	1. 12. 55.37	55.21	— 0.16	86. 54. 63.58	59.50	— 4.08
	18. 5. 4. 44.2	2. 57. 56.30	55.93	— 0.37	78. 33. 2.79	5.60	+ 2.81
	21. 7. 50. 13.9	5. 55. 42.84	42.96	+ 0.12	70. 52. 18.73	17.80	— 0.93
	22. 8. 50. 14.9	6. 59. 50.21	50.76	+ 0.55	70. 39. 8.48	8.50	+ 0.02
	23. 9. 50. 48.9	8. 4. 30.77	31.47	+ 0.70	71. 51. 7.52	5.90	— 1.62
	26. 12. 42. 42.4	11. 8. 42.09	43.25	+ 1.16	82. 23. 44.02	40.80	— 3.22
March	3. 16. 48. 57.3	15. 35. 20.27	20.94	+ 0.67	103. 53. 25.86	29.90	+ 4.04
	4. 17. 36. 18.5	16. 26. 45.78	46.41	+ 0.63	106. 33. 17.77	22.50	+ 4.73
	5. 18. 23. 49.3	17. 18. 20.90	21.39	+ 0.49	108. 23. 11.02	16.60	+ 5.58
	17. 3. 2. 0.8	2. 41. 19.62	19.37	— 0.25	.....	...	...
	18. 3. 53. 35.0	3. 36. 58.82	58.81	— 0.01	75. 56. 24.35	28.90	+ 4.55
	25. 10. 29. 31.2	10. 41. 36.02	36.60	+ 0.58	80. 15. 51.41	49.20	— 2.21
	26. 11. 21. 55.3	11. 38. 5.26	5.72	+ 0.46	84. 49. 44.36	40.00	— 4.36
	27. 12. 12. 35.0	12. 32. 49.83	50.37	+ 0.54	89. 37. 17.89	15.00	— 2.89
	28. 13. 1. 59.6	13. 26. 19.08	19.58	+ 0.50	94. 20. 12.72	9.20	— 3.52
	29. 13. 50. 39.2	14. 19. 3.25	3.77	+ 0.52	98. 42. 29.86	27.20	— 2.66
April	2. 17. 3. 56.7	17. 48. 38.54	39.19	+ 0.65	109. 12. 51.31	53.70	+ 2.39
	21. 8. 23. 13.3	10. 21. 24.29	25.24	+ 0.95	78. 37. 50.41	46.30	— 4.11
	22. 9. 14. 49.6	11. 17. 5.53	6.39	+ 0.86	82. 57. 12.92	10.20	— 2.72
	24. 10. 53. 27.8	13. 3. 53.07	53.47	+ 0.40	92. 21. 37.01	35.30	— 1.71
	25. 11. 41. 38.8	13. 56. 8.55	9.01	+ 0.46	96. 53. 57.69	53.40	— 4.29
	27. 13. 18. 5.8	15. 40. 44.50	44.90	+ 0.40	104. 28. 55.20	50.70	— 4.50
	28. 14. 6. 45.5	16. 33. 28.75	29.25	+ 0.50	107. 10. 2.61	5.70	+ 3.09
	29. 14. 55. 37.5	17. 26. 25.33	25.47	+ 0.14	108. 57. 27.11	28.90	+ 1.79
May	1. 16. 32. 43.3	19. 11. 40.16	40.47	+ 0.31	109. 39. 49.21	53.50	+ 4.29
	2. 17. 20. 18.5	20. 3. 19.76	20.30	+ 0.54	108. 36. 22.52	29.50	+ 6.98
	4. 18. 52. 53.7	21. 44. 3.23	4.05	+ 0.82	.....	...	...
	18. 6. 20. 29.6	10. 4. 47.33	47.85	+ 0.52	77. 13. 32.85	27.10	— 5.75
	19. 7. 12. 23.2	11. 0. 46.00	46.55	+ 0.55	81. 23. 17.02	10.00	— 7.02
	20. 8. 2. 0.6	11. 54. 28.17	28.85	+ 0.68	85. 57. 17.58	12.90	— 4.68
	21. 8. 50. 5.0	12. 46. 37.02	37.69	+ 0.67	90. 39. 22.42	20.90	— 1.52
	22. 9. 37. 21.7	13. 37. 58.00	58.43	+ 0.43	95. 14. 59.39	56.30	— 3.09
	23. 10. 24. 29.9	14. 29. 10.54	10.99	+ 0.45	99. 30. 46.00	45.90	— 0.10
	27. 13. 37. 37.3	17. 58. 35.83	36.29	+ 0.46	109. 43. 57.09	59.40	+ 2.31

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of the MOON'S CENTER—*continued*.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
May 28. 14. 26. 21.5	18. 51. 24.62	25.04	+ 0.42	110. 0. 57.06	59.10	+ 2.04
30. 16. 1. 32.9	20. 34. 44.80	45.15	+ 0.35	107. 45. 46.71	50.10	+ 3.39
31. 16. 47. 32.7	21. 24. 48.65	49.14	+ 0.49	105. 22. 42.80	46.70	+ 3.90
June 1. 17. 32. 35.4	22. 13. 55.30	55.77	+ 0.47	102. 17. 27.94	39.80	+ 11.86
2. 18. 17. 4.6	23. 2. 28.38	28.77	+ 0.39	98. 37. 8.32	25.60	+ 17.28
3. 19. 1. 36.2	23. 51. 3.88	3.99	+ 0.11	94. 29. 15.44	28.90	+ 13.46
17. 6. 48. 44.5	12. 31. 24.60	25.00	+ 0.40	89. 3. 6.23	3.20	- 3.03
18. 7. 35. 3.5	13. 22. 46.73	47.00	+ 0.27	93. 42. 59.23	56.50	- 2.73
19. 8. 22. 42.6	14. 13. 30.23	30.55	+ 0.32	98. 5. 53.56	53.40	- 0.16
20. 9. 9. 24.6	15. 4. 16.45	16.87	+ 0.42	102. 0. 45.16	45.50	+ 0.34
21. 9. 56. 37.2	15. 55. 33.42	33.69	+ 0.27	105. 17. 40.79	41.70	+ 0.91
22. 10. 44. 31.0	16. 47. 31.57	32.00	+ 0.43	107. 48. 3.66	7.60	+ 3.94
23. 11. 32. 59.3	17. 40. 4.42	4.76	+ 0.34	109. 25. 17.15	21.90	+ 4.75
24. 12. 21. 39.5	18. 32. 49.15	49.50	+ 0.35	110. 5. 14.75	17.50	+ 2.75
25. 13. 10. 0.6	19. 25. 14.82	15.25	+ 0.43	109. 46. 57.73	60.80	+ 3.07
29. 16. 13. 29.0	22. 44. 59.52	59.89	+ 0.37	100. 12. 20.50	25.20	+ 4.70
July 1. 17. 41. 12.1	0. 20. 50.22	50.81	+ 0.59	92. 1. 24.12	30.10	+ 5.98
4. 20. 2. 40.5	2. 54. 31.47	31.87	+ 0.40	78. 46. 42.79	52.00	+ 9.21
14. 4. 44. 20.6	12. 13. 6.24	7.07	+ 0.83	87. 13. 19.14	18.90	- 0.24
15. 5. 33. 14.2	13. 6. 4.50	5.41	+ 0.91	92. 2. 48.85	49.80	+ 0.95
21. 10. 18. 25.4	18. 15. 41.90	41.87	- 0.03	109. 56. 35.43	40.90	+ 5.47
22. 11. 6. 43.2	19. 8. 4.13	4.40	+ 0.27	109. 58. 47.48	49.80	+ 2.32
25. 13. 27. 6.4	21. 40. 40.04	40.54	+ 0.50	104. 41. 31.15	32.70	+ 1.55
26. 14. 11. 43.4	22. 29. (20.89)	21.32	(+ 0.43)	101. 27. 18.25	18.80	+ 0.55
27. 14. 55. 30.5	23. 17. 11.83	12.36	+ 0.53	97. 42. 0.79	1.00	+ 0.21
Aug. 3. 20. 35. 53.6	5. 26. 6.71	7.00	+ 0.29	70. 59. (79.21)	56.80	(- 22.41)
4. 21. 36. 35.2	6. 30. (54.83)	54.02	(- 0.81)	.....	...	...
13. 5. 3. 0.8	14. 30. 6.23	7.28	+ 1.05	99. 15. 29.08	31.50	+ 2.42
15. 6. 38. 49.4	16. 14. 3.70	4.13	+ 0.43	106. 9. 46.25	44.30	- 1.95
16. 7. 26. 55.3	.....	...	...	108. 23. 35.80	39.20	+ 3.40
18. 9. 3. 29.2	18. 50. 56.72	56.87	+ 0.15	110. 3. 35.38	40.60	+ 5.22
19. 9. 51. 23.3	19. 42. 55.39	55.44	+ 0.05	109. 27. 36.31	39.80	+ 3.49
20. 10. 38. 33.5	20. 34. 9.92	10.17	+ 0.25	107. 56. 56.29	59.20	+ 2.91
21. 11. 24. 45.1	21. 24. 25.71	26.09	+ 0.38	105. 36. 36.21	39.10	+ 2.89
22. 12. 9. 54.7	22. 13. 39.25	39.54	+ 0.29	102. 33. 30.52	32.70	+ 2.18
23. 12. 54. 11.0	23. 1. 59.39	59.83	+ 0.44	98. 55. 51.28	53.70	+ 2.42
24. 13. 37. 55.9	23. 49. 47.97	48.58	+ 0.61	94. 52. 46.26	46.70	+ 0.44
26. 15. 6. 6.8	1. 26. 6.53	6.96	+ 0.43	86. 9. 26.17	25.80	- 0.37
28. 16. 39. 58.1	3. 8. 6.31	7.29	+ 0.98	77. 50. 18.73	16.60	- 2.13
29. 17. 30. 51.2	4. 3. 4.35	5.12	+ 0.77	74. 22. 42.14	39.50	- 2.64
30. 18. 24. 59.8	5. 1. 18.38	19.11	+ 0.73	71. 44. 10.86	8.50	- 2.36
Sep. 11. 4. 31. 53.1	15. 53. 13.45	14.87	+ 1.42	105. 7. 18.79	16.30	- 2.49
12. 5. 20. 58.5	16. 46. 23.43	24.27	+ 0.84	107. 44. 58.33	58.40	+ 0.07
14. 6. 58. 43.7	18. 32. 17.83	18.09	+ 0.26	110. 8. 4.60	5.80	+ 1.20
18. 10. 6. 33.7	21. 56. 24.91	25.00	+ 0.09	103. 44. 11.56	11.60	+ 0.04
21. 12. 19. 37.0	0. 21. 39.67	40.32	+ 0.65	91. 57. 50.93	51.00	+ 0.07
22. 13. 4. 16.1	1. 10. 22.87	23.56	+ 0.69	87. 29. 18.51	21.90	+ 3.39
25. 15. 27. 38.6	3. 45. 58.44	58.98	+ 0.54	75. 12. 26.14	24.70	- 1.44
26. 16. 20. 18.4	4. 42. 43.45	44.03	+ 0.58	72. 17. 42.40	42.50	+ 0.10
27. 17. 15. 37.7	5. 42. 8.35	8.97	+ 0.62	70. 23. 57.64	58.20	+ 0.56
Oct. 11. 4. 51. 13.1	18. 10. 53.80	54.47	+ 0.67	110. 10. 50.49	44.80	- 5.69
12. 5. 40. 23.0	19. 4. 7.71	8.00	+ 0.29	110. 17. 34.51	33.80	- 0.71
14. 7. 15. 32.7	20. 47. 25.71	26.19	+ 0.48	107. 39. 21.55	24.50	+ 2.95

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	o ' "	"	"
Oct. 15. 8. 1. 22.7	21. 37. 20.26	20.41	+ 0.15	105. 4. 49.54	53.90	+ 4.36
16. 8. 46. 14.9	22. 26. 16.37	16.74	+ 0.37	101. 48. 48.01	50.80	+ 2.46
17. 9. 30. 31.9	23. 14. 37.22	37.56	+ 0.34	97. 58. (37.51)	48.70	(+ 11.19)
18. 10. 14. 43.7	0. 2. 52.84	53.46	+ 0.62	93. 43. 17.50	19.70	+ 2.20
20. 11. 45. 20.6	1. 41. 38.22	39.29	+ 1.07	84. 37. 20.26	20.30	+ 0.04
21. 12. 33. 5.2	2. 33. 26.68	27.70	+ 1.02	80. 12. 10.96	13.00	+ 2.04
22. 13. 23. 11.2	3. 27. 37.50	38.69	+ 1.19	76. 12. 37.63	38.40	+ 0.77
25. 16. 8. 31.0	6. 25. 14.10	14.79	+ 0.69	69. 33. 27.21	24.90	- 2.31
26. 17. 6. 35.5	7. 27. 24.73	25.49	+ 0.76	69. 50. 3.83	5.70	+ 1.87
28. 19. 0. 36.3	9. 29. 37.34	38.23	+ 0.89	74. 20. 25.18	20.90	- 4.28
Nov. 8. 3. 31. 39.1	18. 41. 29.63	30.74	+ 1.11	.....	...	...
11. 5. 55. 8.2	21. 17. 11.95	12.25	+ 0.30	106. 29. 15.64	23.10	+ 7.46
12. 6. 40. 9.7	22. 6. 17.36	17.58	+ 0.22	103. 29. 26.62	29.80	+ 3.18
13. 7. 24. 14.3	22. 54. 25.79	25.88	+ 0.09	99. 52. 56.12	61.00	+ 4.88
14. 8. 7. 55.9	23. 42. 11.15	11.51	+ 0.36	95. 47. 31.15	34.30	+ 3.15
17. 10. 24. 4.6	.....	...	...	82. 8. 49.36	49.00	- 0.36
24. 16. 57. 1.7	9. 12. 9.42	10.68	+ 1.26	73. 6. 65.00	59.80	- 5.20
25. 17. 52. 5.0	10. 11. 18.30	19.51	+ 1.21	76. 43. 37.73	33.80	- 3.93
28. 20. 24. 21.9	12. 55. 42.89	44.35	+ 1.46	90. 56. 51.54	50.70	- 0.84
Dec. 12. 6. 44. 46.5	0. 9. 11.70	11.98	+ 0.28	93. 33. 57.93	59.10	+ 1.17
17. 10. 46. 27.5	4. 31. 15.14	15.93	+ 0.79	72. 30. 52.92	57.70	+ 4.78
19. 12. 45. 38.6	6. 38. 38.98	40.33	+ 1.35	69. 12. 8.96	7.90	- 1.06
20. 13. 47. 25.6	7. 44. 32.61	33.95	+ 1.34	69. 46. 25.88	28.80	+ 2.92
21. 14. 48. 4.4	8. 49. 17.95	19.23	+ 1.23	71. 51. 1.10	0.70	- 0.40
22. 15. 46. 7.2	9. 51. 26.87	28.11	+ 1.24	75. 11. 30.22	30.20	- 0.02
27. 19. 59. 4.1	14. 24. 48.12	49.21	+ 1.09	98. 51. 40.03	42.20	+ 2.17

1850, October 21. See the Note to the R. A. observation on page [67].

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

April 27. 0. 39. 2.5	2. 59. 36.51	36.59	+ 0.08	71. 48. 55.66	48.20	- 7.46
May 13. 1. 25. 56.0	4. 49. 42.61	42.63	+ 0.02	65. 4. 7.02	2.80	- 4.22
20. 1. 26. 44.3	5. 18. 6.89	7.07	+ 0.18	65. 1. 26.63	25.00	- 1.63
21. 1. 25. 35.7	5. 20. 54.66	54.57	- 0.09	.....	...	...
Aug. 5. 0. 30. 23.6	9. 24. 11.82	11.54	- 0.28	72. 53. 21.51	20.80	- 0.71
16. 1. 3. 43.4	10. 41. 59.16	59.74	+ 0.58	80. 35. 42.37	45.30	+ 2.93
Sep. 12. 1. 30. 11.1	12. 54. 58.19	57.73	- 0.46	98. 37. 32.51	35.30	+ 2.79
13. 1. 29. 39.4	12. 58. 22.90	22.44	- 0.46	99. 7. 14.70	18.10	+ 3.40
Nov. 5. 22. 55. 48.5	13. 57. 0.57	0.81	+ 0.24	100. 13. 25.09	23.80	- 1.29
7. 22. 59. 56.3	14. 9. 2.15	2.05	- 0.10	.....	...	...
10. 23. 6. 23.3	14. 27. 19.86	20.44	+ 0.58	103. 22. 43.95	43.10	- 0.85
Dec. 16. 0. 39. 53.1	.....	...	...	115. 29. 45.52	50.70	+ 5.18
20. 0. 52. 0.9	.....	...	...	115. 13. 45.05	47.90	+ 2.85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Jan. 4. 23. 6. 26.7	18. 5. 11.49	11.02	— 0.47	113. 22. 44.25	43.60	— 0.65
Feb. 3. 23. 49. 17.3	20. 46. 25.82	25.99	+ 0.17	109. 2. 14.02	12.70	— 1.32
Mar. 27. 0. 29. 53.8	0. 48. 13.16	13.13	— 0.03	86. 5. 26.69	22.40	— 4.29
April 18. 0. 45. 16.6	2. 30. 22.69	23.00	+ 0.31	75. 40. 30.26	28.40	— 1.86
26. 0. 52. 32.4	3. 9. 12.61	12.60	— 0.01	72. 28. 37.24	34.40	— 2.84
27. 0. 53. 41.8	3. 14. 8.39	8.63	+ 0.24	72. 6. 33.41	29.50	— 3.91
29. 0. 55. 33.9	3. 24. 3.75	4.06	+ 0.31	71. 23. 46.00	44.20	— 1.80
May 2. 0. 58. 45.1	.....	...	...	70. 23. 22.05	17.60	— 4.45
10. 1. 8. 4.0	4. 19. 57.94	58.08	+ 0.14	68. 5. 56.59	55.80	— 0.79
13. 1. 11. 49.9	4. 35. 34.18	34.52	+ 0.34	67. 24. 13.65	10.30	— 3.35
20. 1. 21. 6.1	5. 12. 27.81	28.16	+ 0.35	66. 9. 25.22	23.80	— 1.42
21. 1. 22. 28.2	5. 17. 46.70	47.00	+ 0.30	66. 1. 26.59	24.90	— 1.69
25. 1. 28. 1.1	5. 39. 6.69	6.83	+ 0.14	65. 36. 30.71	29.10	— 1.61
31. 1. 36. 27.4	6. 11. 13.74	13.78	+ 0.04	65. 20. 29.58	29.00	— 0.58
June 3. 1. 40. 40.2	6. 27. 16.87	16.99	+ 0.12	65. 22. 16.72	13.40	— 3.32
4. 1. 42. 4.1	6. 32. 37.57	37.62	+ 0.05	65. 24. 16.23	14.90	— 1.33
10. 1. 50. 18.0	7. 4. 32.14	32.31	+ 0.17	65. 51. 24.62	24.30	— 0.32
17. 1. 59. 22.1	7. 41. 13.64	13.69	+ 0.05	66. 54. 44.02	44.10	+ 0.08
18. 2. 0. 36.1	7. 46. 24.39	24.31	— 0.08	67. 6. 27.74	27.20	— 0.54
21. 2. 4. 10.8	.....	...	...	67. 45. 24.86	26.30	+ 1.44
22. 2. 5. 20.5	8. 6. 55.43	55.41	— 0.02	67. 59. 40.55	41.00	+ 0.45
24. 2. 7. 35.0	8. 17. 3.76	3.63	— 0.13	68. 29. 58.96	59.20	+ 0.24
25. 2. 8. 40.5	8. 22. 6.00	5.82	— 0.18	68. 46. 2.04	1.70	— 0.34
26. 2. 9. 44.6	8. 27. 6.90	6.71	— 0.19	69. 2. 39.61	38.90	— 0.71
July 13. 2. 24. 26.4	9. 48. 52.52	52.20	— 0.32	75. 3. 3.91	3.90	— 0.01
Aug. 5. 2. 34. 47.5	11. 29. 56.18	55.86	— 0.32	85. 50. 40.26	38.80	— 1.46
13. 2. 36. 40.1	12. 3. 21.46	21.11	— 0.35	89. 55. 61.57	59.40	— 2.17
20. 2. 37. 55.8	12. 32. 13.28	12.92	— 0.36	93. 31. 53.88	47.80	— 6.08
22. 2. 38. 15.3	12. 40. 25.93	25.35	— 0.58	94. 33. 11.69	5.80	— 5.89
23. 2. 38. 24.7	12. 44. 31.88	31.33	— 0.55	95. 3. 42.82	37.80	— 5.02
Sep. 7. 2. 40. 47.4	13. 46. 3.30	2.70	— 0.60	102. 25. 19.72	15.00	— 4.72
11. 2. 41. 31.3	14. 2. 33.49	32.93	— 0.56	104. 15. 17.67	12.80	— 4.87
12. 2. 41. 42.8	14. 6. 41.59	41.05	— 0.54	104. 42. 4.13	1.00	— 3.13
14. 2. 42. 6.6	14. 14. 58.56	57.96	— 0.60	105. 34. 53.59	43.30	— 10.29
Oct. 15. 2. 47. 59.9	16. 23. 6.00	5.15	— 0.85	115. 44. 29.21	25.60	— 3.61
16. 2. 48. 1.2	16. 27. 3.85	3.02	— 0.83	115. 56. 19.35	15.00	— 4.35
21. 2. 47. 39.8	16. 46. 25.15	24.46	— 0.69	116. 47. 14.19	5.50	— 8.69
Nov. 11. 2. 30. 45.1	17. 52. 15.24	14.35	— 0.89	117. 53. 37.29	33.50	— 3.79
28. 1. 40. 25.5	18. 8. 48.90	46.50	— 2.40	116. 10. 18.80	11.70	— 7.10
29. 1. 35. 57.5	18. 8. 16.68	14.07	— 2.61	115. 59. 61.47	53.20	— 8.27
Dec. 6. 0. 59. 48.4	17. 59. 37.56	34.46	— 3.10	114. 33. 60.29	53.50	— 6.79
27. 22. 44. 33.1	17. 10. 44.24	41.75	— 2.49	108. 44. 58.37	48.30	— 10.07

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Jan. 4. 10. 20. 13.2	5. 16. 52. 14	50.35	— 1.79	63. 33. 59. 05	42.90	— 16.15
5. 10. 15. 11.2	5. 15. 45. 92	44.27	— 1.65	63. 34. 54. 47	39.00	— 15.47
7. 10. 5. 17.8	5. 13. 43. 91	42.19	— 1.72	63. 36. 53. 55	38.00	— 15.55
23. 8. 54. 43.2	5. 6. 2. 63	1.22	— 1.41	63. 52. 26. 97	13.40	— 13.57
30. 8. 28. 29.5	5. 7. 20. 55	19.22	— 1.33	63. 56. 25. 77	14.40	— 11.37
Feb. 6. 8. 4. 43.5	5. 11. 6. 50	5.19	— 1.31	63. 58. 22. 48	12.70	— 9.78
7. 8. 1. 30.7	5. 11. 49. 75	48.52	— 1.23	63. 58. 30. 71	21.30	— 9.41
9. 7. 55. 13.0	5. 13. 24. 15	23.00	— 1.15	63. 58. 42. 16	33.30	— 8.86
13. 7. 43. 7.5	5. 17. 2. 85	1.76	— 1.09	63. 58. 50. 18	41.30	— 8.88
16. 7. 34. 27.5	5. 20. 11. 09	10.29	— 0.80	63. 58. 46. 06	37.90	— 8.16
21. 7. 20. 44.1	5. 26. 8. 24	6.98	— 1.26	63. 58. 36. 91	28.00	— 8.91
22. 7. 18. 4.9	5. 27. 25. 10	24.22	— 0.88	63. 58. 36. 14	27.10	— 9.04
Mar. 1. 7. 0. 21.8	5. 37. 14. 97	14.12	— 0.85	63. 58. 62. 71	55.20	— 7.51
5. 6. 50. 49.3	.....	...	...	63. 59. 62. 05	54.30	— 7.75
6. 6. 48. 29.8	5. 45. 3. 82	2.92	— 0.90	64. 0. 22. 57	15.70	— 6.87
11. 6. 37. 12.4	5. 53. 27. 28	26.47	— 0.81	64. 2. 58. 20	50.70	— 7.50
12. 6. 35. 0.9	5. 55. 12. 00	11.01	— 0.99	64. 3. 40. 62	32.30	— 8.32
13. 6. 32. 50.2	5. 56. 57. 48	56.77	— 0.71	64. 4. 24. 90	17.90	— 7.00
15. 6. 28. 33.1	6. 0. 32. 75	31.81	— 0.94	64. 6. 8. 50	1.20	— 7.30
16. 6. 26. 25.8	6. 2. 21. 66	21.01	— 0.65	64. 6. 66. 07	59.30	— 6.77

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FLORA.

Sep. 2. 13. 49. 13.8	0. 36. 36. 75	...	...	97. 17. 59. 28	...	...
6. 13. 32. 2.0	0. 35. 8. 36	...	...	97. 53. 16. 12	...	...
11. 13. 9. 26.9	0. 32. 12. 25	...	...	98. 36. 49. 00	...	...
12. 13. 4. 52.1	0. 31. 32. 29	...	...	98. 45. 33. 41	...	...
13. 13. 0. 13.9	0. 30. 50. 87	...	...	98. 54. 18. 20	...	...
25. 12. 3. 29.5	0. 21. 15. 79	18.53	+ 2.74	100. 32. 44. 26	24.50	— 19.76
30. 11. 39. 30.0	0. 16. 54. 63	57.39	+ 2.76	101. 6. 52. 03	34.10	— 17.93
Oct. 1. 11. 34. 41.7	0. 16. 2. 51	5.39	+ 2.88	101. 12. 58. 73	41.60	— 17.13
5. 11. 15. 30.0	0. 12. 38. 95	41.57	+ 2.62	101. 34. 46. 70	29.80	— 16.90
7. 11. 6. 5.4	0. 11. 0. 88	3.63	+ 2.75	101. 43. 54. 81	39.30	— 15.51
8. 11. 1. 22.1	0. 10. 13. 37	16.00	+ 2.63	101. 46. 53. 59	106.00	(+ 52.41)
10. 10. 51. 58.3	0. 8. 41. 08	43.85	+ 2.77	101. 55. 17. 80	2.70	— 15.10
11. 10. 47. 18.2	0. 7. 56. 79	59.51	+ 2.72	101. 58. 25. 19	11.80	— 13.39
15. 10. 28. 51.1	0. 5. 12. 84	15.70	+ 2.86	102. 7. 41. 96	29.00	— 12.96
16. 10. 24. 19.5	0. 4. 35. 91	...	...	102. 9. 12. 29	...	...
28. 9. 31. 57.5	.....	...	...	102. 0. 3. 97	...	...
Nov. 4. 9. 3. 39.9	23. 58. 38. 76	...	...	101. 35. 18. 71	...	...
23. 7. 55. 15.8	0. 4. 57. 95	...	...	99. 21. 34. 15	...	...
25. 7. 48. 50.7	.....	...	...	99. 9. 6. 80	...	...
28. 7. 39. 7.7	0. 8. 29. 99	...	...	98. 33. 26. 74	...	...
29. 7. 35. 59.0	0. 9. 17. 32	...	...	98. 24. 2. 71	...	...
Dec. 7. 7. 11. 45.7	0. 16. 32. 46	...	...	96. 58. 36. 97	...	...

It appears probable that the object observed in N. P. D. on October 8 was not Flora.

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VICTORIA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Sep. 25. 11. 17. 25.3	23. 35. 4.03	4.14	+ 0.11	77. 48. 60.33	59.56	- 0.77
Oct. 1. 10. 49. 36.4	23. 30. 49.83	50.08	+ 0.25	78. 54. 25.48	28.66	+ 3.18
2. 10. 45. 2.1	23. 30. 11.33	11.73	+ 0.40	79. 5. 22.35	34.36	+ 12.01
5. 10. 31. 28.5	23. 28. 25.18	24.93	- 0.25	79. 38. 49.38	52.11	+ 2.73
7. 10. 22. 32.7	23. 27. 20.99	21.12	+ 0.13	80. 0. 55.20	56.10	+ 0.90
11. 10. 5. 1.2	23. 25. 32.89	33.08	+ 0.19	80. 44. 7.68	15.45	+ 7.77
29. 8. 52. 8.8	23. 23. 26.38	24.39	- 1.99	83. 29. 28.01	34.48	+ 6.47
31. 8. 44. 37.5	23. 23. 47.04	46.86	- 0.18	83. 43. 55.05	51.87	- 3.18
Nov. 2. 8. 37. 15.7	23. 24. 17.14	16.50	- 0.64	83. 57. 12.02	13.14	+ 1.12
4. 8. 29. 59.9	23. 24. 53.21	53.20	- 0.01	84. 9. 33.61	37.13	+ 3.52
23. 7. 26. 24.0	23. 36. 1.41	1.10	- 0.31	.....	...	...
29. 7. 8. 2.3	23. 41. 16.03	14.87	- 1.16	85. 24. 40.78	66.22	+ 25.44
Dec. 7. 6. 44. 32.7	.....	...	...	85. 20. 45.98	65.01	+ 19.03

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.

Jan. 4. 12. 35. 47.6	7. 32. 48.79	50.77	+ 1.98	67. 10. 6.20	24.70	+ 18.50
7. 12. 20. 44.7	7. 29. 33.10	35.05	+ 1.95	66. 54. 5.70	26.40	+ 20.70
23. 11. 0. 30.4	7. 12. 10.57	12.69	+ 2.12	65. 36. 6.44	23.00	+ 16.56
Feb. 6. 9. 53. 27.3	7. 0. 8.16	10.00	+ 1.84	64. 44. 48.62	62.60	+ 13.98
7. 9. 48. 51.5	6. 59. 28.15	30.11	+ 1.96	64. 41. 53.79	64.60	+ 10.81
9. 9. 39. 45.6	6. 58. 13.86	15.78	+ 1.92	64. 36. 15.31	25.30	+ 9.99
13. 9. 21. 56.5	6. 56. 8.04	9.84	+ 1.80	64. 25. 58.57	71.40	+ 12.83
21. 8. 47. 53.0	6. 53. 31.37	33.22	+ 1.85	64. 9. 36.85	48.00	+ 11.15
27. 8. 23. 44.8	6. 52. 58.52	60.31	+ 1.79	64. 0. 33.64	46.00	+ 12.36
Mar. 7. 7. 53. 23.1	6. 54. 4.24	5.99	+ 1.75	63. 52. 31.27	41.10	+ 9.83
11. 7. 38. 57.3	6. 55. 22.28	23.87	+ 1.59	63. 50. 3.28	14.50	+ 11.22
12. 7. 35. 25.2	6. 55. 46.17	47.85	+ 1.68	63. 49. 39.17	47.50	+ 8.33
13. 7. 31. 54.8	6. 56. 11.79	13.60	+ 1.81	63. 49. 14.57	24.40	+ 9.83
16. 7. 21. 34.6	6. 57. 39.49	41.23	+ 1.74	63. 48. 26.36	37.80	+ 11.44
25. 6. 52. 1.4	7. 3. 30.49	31.96	+ 1.47	63. 49. 32.01	42.40	+ 10.39

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRIS.

May 28. 10. 56. 36.7	15. 21. 5.33	5.67	+ 0.34	111. 36. 39.10	56.60	+ 17.50
30. 10. 46. 54.0	15. 19. 14.22	15.27	+ 1.05	111. 26. 33.06	35.80	+ 2.74
31. 10. 42. 5.0	15. 18. 20.93	21.26	+ 0.33	111. 21. 35.75	26.00	- 9.75
June 1. 10. 37. 16.4	15. 17. 28.07	28.10	+ 0.03	111. 16. 22.40	16.80	- 5.60
2. 10. 32. 28.3	15. 16. 35.76	35.86	+ 0.10	111. 11. 8.70	8.70	0.00
3. 10. 27. 40.1	15. 15. 44.32	...	...	111. 6. 5.40	...	...
4. 10. 22. 54.8	15. 14. 53.96	...	...	111. 0. 52.58	...	...
6. 10. 13. 37.0	.....	...	...	110. 50. 44.89	...	...
8. 10. 4. 1.8	15. 11. 43.90	...	...	110. 41. 1.12	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of METIS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Errors of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Dec. 5. 16. 55. 59.6	9. 54. 29.24	23.61	— 5.63	.....	...	...
15. 16. 22. 31.9	10. 0. 21.76	14.31	— 7.35	70. 57. 44.04	24.03	—20.01
27. 15. 38. 20.0	10. 3. 21.04	8.08	—12.96	.....	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HEBE.

Feb. 20. 15. 25. 1.2	.....	...	...	83. 39. 27.94	...	...
April 17. 11. 8. 37.7	12. 51. 29.67	...	...	75. 53. 9.65	...	...
18. 11. 3. 55.5	12. 50. 43.15	...	...	75. 48. 21.54	...	...
May 2. 9. 59. 33.5	12. 41. 22.37	...	...	75. 7. 51.14	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PARTHENOPE.

May 31. 10. 27. 15.4	15. 3. 28.95	28.55	— 0.40	99. 47. 53.78	50.12	— 3.66
June 1. 10. 22. 34.5	15. 2. 43.76	42.88	— 0.83	99. 46. 53.59	45.56	— 8.03
2. 10. 17. 54.0	15. 1. 59.06	58.42	— 0.64	99. 45. 51.96	49.61	— 2.35
3. 10. 13. 14.8	15. 1. 15.70	15.20	— 0.50	99. 45. 8.84	2.30	— 6.54
4. 10. 8. 36.7	15. 0. 33.42	33.28	— 0.14	99. 44. 26.48	23.70	— 2.78
6. 9. 59. 25.2	14. 59. 13.51	13.50	— 0.01	99. 43. 29.03	33.28	+ 4.25
8. 9. 50. 19.4	14. 57. 59.25	59.42	+ 0.17	99. 43. 19.27	18.80	— 0.47

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO.

Mar. 15. 14. 4. 23.4	13. 37. 37.91	40.09	+ 2.18	92. 4. 2.53	26.20	+23.67
April 17. 11. 30. 41.3	13. 13. 36.78	39.51	+ 2.73	87. 46. 16.83	28.90	+12.07
18. 11. 26. 0.3	13. 12. 51.63	54.17	+ 2.54	87. 39. 29.16	47.70	+18.54
May 2. 10. 21. 26.8	.....	...	...	86. 21. 13.62	28.10	+14.48

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

Aug. 3. 13. 3. 7.2	.....	...	...	78. 35. 56.19	35.10	—21.09
12. 12. 21. 11.4	21. 45. 32.26	31.88	— 0.38	79. 46. 54.27	34.10	—20.17
19. 11. 48. 20.2	.....	...	...	80. 53. 45.48	22.30	—23.18
21. 11. 38. 57.3	21. 38. 40.25	40.00	— 0.25	81. 14. 27.02	5.60	—21.42
23. 11. 29. 37.0	21. 37. 9.47	9.03	— 0.44	81. 35. 52.42	27.80	—24.62
24. 11. 24. 53.9	21. 36. 24.19	23.86	— 0.33	81. 46. 46.30	22.70	—23.60
26. 11. 15. 32.9	21. 34. 54.74	54.36	— 0.38	82. 8. 63.70	38.00	—25.70
29. 11. 1. 33.9	21. 32. 43.11	42.77	— 0.34	82. 42. 82.85	59.60	—23.25
Sep. 2. 10. 43. 2.0	21. 29. 54.32	53.99	— 0.33	83. 30. 46.97	20.70	—26.27
4. 10. 33. 49.8	21. 28. 33.77	33.15	— 0.62	83. 54. 56.78	33.30	—23.48

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF PALLAS—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Sep. 6. 10. 24. 39.9	21. 27. 15.42	15.09	— 0.33	84. 19. 26.27	2.50	— 23.77
7. 10. 20. 6.4	21. 26. 37.77	37.18	— 0.59	84. 31. 48.85	22.20	— 26.65
11. 10. 1. 59.8	21. 24. 14.36	13.91	— 0.45	85. 21. 29.66	4.00	— 25.66
12. 9. 57. 30.7	21. 23. 41.10	40.32	— 0.78	85. 33. 58.67	33.00	— 25.67
30. 8. 39. 42.5	21. 16. 37.60	37.07	— 0.53	.....	...	...
Oct. 8. 8. 7. 10.2	21. 15. 32.82	32.27	— 0.55	90. 42. 79.40	56.30	— 23.10
16. 7. 35. 58.8	21. 15. 48.75	47.84	— 0.91	.....	...	...
21. 7. 17. 8.4	.....	...	...	92. 50. (48.38)	39.60	(— 8.78)

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF CERES.

Aug. 21. 14. 53. 10.3	0. 53. 25.13	36.92	+ 11.79	100. 21. 117.14	23.80	— 93.34
Sep. 2. 14. 0. 59.2	0. 48. 24.06	36.75	+ 12.69	101. 31. 118.28	22.50	— 95.78
6. 13. 42. 55.9	0. 46. 4.03	17.12	+ 13.09	101. 55. 135.35	39.40	— 95.95
7. 13. 38. 22.6	0. 45. 26.49	39.46	+ 12.97	102. 1. 138.79	43.00	— 95.79
10. 13. 24. 36.0	0. 43. 27.31	40.37	+ 13.06	102. 19. 140.12	45.20	— 94.92
11. 13. 19. 18.7	0. 42. 45.84	58.77	+ 12.93	102. 25. 137.82	41.90	— 95.92
12. 13. 15. 27.4	.....	...	...	102. 31. 134.32	35.80	— 98.52
13. 13. 10. 41.0	0. 41. 19.70	32.94	+ 13.24	102. 37. 121.45	26.50	— 94.95
25. 12. 14. 1.3	0. 31. 49.28	62.67	+ 13.39	103. 41. 99.70	6.40	— 93.30
30. 11. 50. 10.0	0. 27. 36.35	49.89	+ 13.54	104. 2. 125.31	33.00	— 92.31
Oct. 1. 11. 45. 23.2	0. 26. 45.76	59.19	+ 13.43	104. 6. 113.05	22.70	— 90.35
5. 11. 26. 18.8	0. 23. 24.47	37.79	+ 13.32	104. 19. 146.67	59.90	— 86.77
7. 11. 16. 48.1	.....	...	...	104. 25. 131.36	44.10	— 87.26
10. 11. 2. 35.6	0. 19. 20.12	33.35	+ 13.23	104. 32. 142.24	55.50	— 86.74
11. 10. 57. 52.3	0. 18. 32.58	45.98	+ 13.40	104. 34. 137.16	56.10	— 81.06
15. 10. 39. 6.5	0. 15. 29.93	43.17	+ 13.24	104. 40. 140.95	58.90	— 82.05
16. 10. 34. 27.1	0. 14. 46.37	59.36	+ 12.99	104. 41. 137.59	59.40	— 78.19
21. 10. 11. 21.8	0. 11. 20.00	33.63	+ 13.63	104. 43. 139.08	59.60	— 79.48
28. 9. 39. 47.7	.....	...	...	104. 38. 96.67	21.50	— 75.17
29. 9. 34. 41.5	0. 6. 46.25	58.66	+ 12.41	104. 36. 120.76	45.80	— 74.96
Nov. 2. 9. 17. 50.0	0. 4. 58.06	69.95	+ 11.89	104. 28. 100.78	28.00	— 72.78
4. 9. 9. 11.5	0. 4. 11.29	23.41	+ 12.12	104. 23. 85.69	11.50	— 74.19
14. 8. 27. 22.8	0. 1. 41.22	52.51	+ 11.29	.....	...	...
19. 8. 7. 20.2	0. 1. 18.16	28.87	+ 10.71	103. 21. 119.58	54.40	— 65.18
23. 7. 51. 42.4	.....	...	...	102. 59. 117.62	49.80	— 67.82
25. 7. 44. 1.4	0. 1. 34.83	45.22	+ 10.39	102. 48. 64.31	0.10	— 64.21
28. 7. 32. 39.8	0. 2. 1.07	11.25	+ 10.18	102. 29. 80.57	19.60	— 60.97
29. 7. 28. 55.2	0. 2. 12.39	22.52	+ 10.13	102. 22. 115.71	51.70	— 64.01
Dec. 7. 6. 59. 43.3	0. 4. 28.15	37.85	+ 9.70	101. 27. 71.87	11.20	— 60.67

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF HYGEIA.

July 5. 12. 26. 52.9	19. 20. 85.57	52.99	— 32.58	112. 12. 5.75	161.71	+ 155.96
11. 11. 58. 12.2	19. 15. 79.48	44.55	— 34.93	112. 14. 34.09	185.99	+ 151.90
12. 11. 53. 25.1	19. 14. 88.15	53.32	— 34.83	112. 15. 0.47	146.63	+ 146.16

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Errors of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Jan. 4. 16. 38. 54.4	11. 36. 35.52	34.66	— 0.86	86. 3. 52.10	46.70	— 5.40
7. 16. 27. 10.2	11. 36. 39.08	38.35	— 0.73	86. 3. 21.62	15.40	— 6.22
23. 15. 22. 48.1	11. 35. 11.30	10.60	— 0.70	85. 49. 12.19	2.90	— 9.29
30. 14. 53. 44.3	11. 33. 38.64	37.55	— 1.09	85. 37. 13.15	7.50	— 5.65
Feb. 6. 14. 24. 10.0	11. 31. 35.36	34.21	— 1.15	85. 22. 14.15	7.80	— 6.35
7. 14. 19. 53.7	11. 31. 15.55	14.29	— 1.26	85. 19. 52.20	45.70	— 6.50
9. 14. 11. 20.9	11. 30. 33.77	32.87	— 0.90	85. 14. 57.76	52.20	— 5.56
16. 13. 41. 9.7	11. 27. 53.53	52.56	— 0.97	84. 56. 22.52	17.50	— 5.02
20. 13. 23. 45.7	11. 26. 12.86	11.81	— 1.05	84. 44. 53.67	50.20	— 3.47
22. 13. 15. 1.5	11. 25. 20.35	19.38	— 0.97	84. 38. 59.80	56.00	— 3.80
26. 12. 59. 30.0	11. 23. 32.17	31.16	— 1.01	84. 26. 57.60	51.60	— 6.00
March 4. 12. 31. 6.5	11. 20. 43.67	42.61	— 1.06	84. .8. 22.72	19.80	— 2.92
5. 12. 26. 42.1	11. 20. 15.06	14.04	— 1.02	84. 5. 22.38	13.20	— 9.18
6. 12. 22. 17.6	11. 19. 46.41	45.38	— 1.03	84. 2. 13.41	6.60	— 6.81
11. 12. 0. 14.8	11. 17. 22.75	21.55	— 1.20	83. 46. 42.58	37.90	— 4.68
12. 11. 55. 50.1	11. 16. 53.83	52.83	— 1.00	83. 43. 38.23	34.00	— 4.23
15. 11. 42. 37.0	11. 15. 28.26	27.13	— 1.13	83. 34. 34.18	28.50	— 5.68
16. 11. 38. 12.9	11. 14. 60.01	58.79	— 1.22	83. 31. 35.06	29.20	— 5.86
21. 11. 16. 14.6	11. 12. 40.83	39.77	— 1.06	83. 16. 62.72	56.90	— 5.82
23. 11. 7. 29.0	11. 11. 46.92	45.75	— 1.17	83. 11. 27.43	21.50	— 5.93
25. 10. 58. 44.2	11. 10. 53.83	52.85	— 0.98	83. 5. 59.47	55.20	— 4.27
27. 10. 50. 1.0	11. 10. 2.29	1.22	— 1.07	.....	...	...
28. 10. 45. 39.9	11. 9. 37.02	35.92	— 1.10	82. 58. 9.59	4.40	— 5.19
April 2. 10. 23. 59.9	11. 7. 36.18	35.20	— 0.98	82. 45. 59.46	55.70	— 3.76
5. 10. 11. 5.2	11. 6. 29.03	27.93	— 1.10	82. 39. 22.01	15.80	— 6.21
18. 9. 16. 1.8	11. 2. 31.81	30.89	— 0.92	82. 16. 43.67	38.90	— 4.77
20. 9. 7. 42.6	11. 2. 4.32	3.26	— 1.06	82. 14. 14.61	9.30	— 5.31
22. 8. 59. 25.7	11. 1. 39.15	38.15	— 1.00	82. 11. 61.14	56.20	— 4.94
24. 8. 51. 11.4	11. 1. 16.58	15.62	— 0.96	82. 9. 65.00	59.80	— 5.20
25. 8. 47. 5.2	11. 1. 6.28	5.33	— 0.95	82. 9. 13.66	8.00	— 5.66
26. 8. 42. 49.7	11. 0. 56.66	55.69	— 0.97	82. 8. 25.10	20.30	— 4.80
27. 8. 38. 54.7	11. 0. 47.57	46.71	— 0.86	82. 7. 41.59	36.90	— 4.69
May 2. 8. 18. 40.4	11. 0. 12.73	11.74	— 0.99	82. 5. 7.88	3.60	— 4.28
13. 7. 35. 7.9	10. 59. 55.11	54.14	— 0.97	82. 5. 45.89	41.50	— 4.39
Dec. 15. 19. 33. 33.1	13. 11. 54.21	53.22	— 0.99	96. 17. 35.11	32.30	— 2.81
16. 19. 30. 9.2	13. 12. 26.32	25.01	— 1.31	96. 20. 35.50	34.00	— 1.50
17. 19. 26. 44.3	13. 12. 57.38	56.35	— 1.03	96. 23. 36.11	32.70	— 3.41
27. 18. 52. 12.1	13. 17. 45.15	44.12	— 1.03	96. 50. 30.20	27.00	— 3.20
29. 18. 45. 11.8	13. 18. 36.80	35.68	— 1.12	96. 55. 13.71	10.40	— 3.31

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Errors of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Jan. 7. 5. 4. 20.0	0. 11. 56.68	55.27	— 1.41	91. 16. 56.87	57.40	+ 0.53
Aug. 18. 15. 32. 13.9	1. 20. 45.45	44.04	— 1.41	84. 20. 29.36	26.30	— 3.06
19. 15. 28. 11.8	1. 20. 39.28	38.05	— 1.23	84. 21. 23.53	18.70	— 4.83
21. 15. 20. 7.1	1. 20. 26.28	24.97	— 1.31	84. 23. 13.87	9.50	— 4.37
26. 14. 59. 49.2	1. 19. 47.71	46.10	— 1.61	84. 28. 23.90	21.00	— 2.90
29. 14. 47. 32.9	1. 19. 20.18	18.65	— 1.53	84. 31. 52.60	50.60	— 2.00
30. 14. 34. 28.1	1. 19. 10.33	8.83	— 1.50	84. 33. 5.51	4.00	— 1.51

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Sep. 2. 14. 31. 8.9	1. 18. 38.77	37.44	— 1.33	84. 36. 57.93	54.90	— 3.03
6. 14. 14. 39.2	1. 17. 52.57	51.24	— 1.33	84. 42. 30.06	26.00	— 4.06
7. 14. 10. 31.6	1. 17. 40.25	38.95	— 1.30	84. 43. 57.11	52.70	— 4.41
10. 13. 53. 4.9	1. 17. 1.71	0.40	— 1.31	84. 48. 23.94	21.40	— 2.54
11. 13. 53. 55.7	1. 16. 48.39	47.02	— 1.37	84. 49. 57.39	53.70	— 3.69
12. 13. 49. 46.1	1. 16. 34.67	33.38	— 1.29	84. 51. 31.47	27.30	— 4.17
13. 13. 45. 36.5	1. 16. 20.87	19.49	— 1.38	84. 53. 4.51	2.10	— 2.41
14. 13. 41. 26.5	1. 16. 6.79	5.36	— 1.43	84. 54. 41.69	38.10	— 3.59
25. 12. 55. 22.7	1. 13. 17.51	16.12	— 1.39	85. 13. 23.27	18.70	— 4.57
28. 12. 42. 45.4	1. 12. 27.83	26.37	— 1.46	85. 18. 45.87	39.90	— 5.97
30. 12. 34. 20.3	1. 11. 53.91	52.57	— 1.34	85. 22. 21.73	16.20	— 5.53
Oct. 1. 12. 30. 6.8	1. 11. 36.77	35.50	— 1.27	85. 24. 8.29	4.90	— 3.39
5. 12. 13. 14.4	1. 10. 27.75	26.34	— 1.41	85. 31. 24.93	21.60	— 3.33
7. 12. 4. 47.5	1. 9. 52.65	51.37	— 1.28	85. 35. 2.13	0.30	— 1.83
11. 11. 47. 53.8	1. 8. 42.35	41.05	— 1.30	85. 42. 19.30	15.80	— 3.50
12. 11. 43. 40.6	1. 8. 24.98	23.45	— 1.53	85. 44. 7.04	3.90	— 3.14
15. 11. 31. 0.2	1. 7. 32.14	30.76	— 1.38	85. 49. 26.70	25.60	— 1.10
16. 11. 26. 46.8	1. 7. 14.63	13.27	— 1.36	85. 51. 16.65	11.70	— 4.95
21. 11. 5. 41.0	1. 5. 48.15	46.73	— 1.42	85. 59. 53.42	51.40	— 2.02
26. 10. 44. 37.5	1. 4. 23.97	22.56	— 1.41	86. 8. 10.88	7.90	— 2.98
28. 10. 36. 13.0	1. 3. 51.15	49.80	— 1.35	86. 11. 20.67	18.40	— 2.27
29. 10. 32. 1.1	1. 3. 35.09	33.66	— 1.43	86. 12. 57.38	51.80	— 5.58
Nov. 2. 10. 16. 14.7	1. 2. 32.35	30.83	— 1.52	86. 18. 55.02	51.00	— 4.02
4. 10. 6. 52.7	1. 2. 1.89	0.60	— 1.29	86. 21. 45.39	41.40	— 3.99
8. 9. 50. 11.6	1. 1. 4.27	2.85	— 1.42	86. 27. 8.16	1.60	— 6.56
11. 9. 37. 43.6	1. 0. 23.86	22.16	— 1.70	86. 30. 46.39	42.40	— 3.99
12. 9. 33. 34.4	1. 0. 10.60	9.14	— 1.46	86. 31. 56.87	52.10	— 4.77
14. 9. 25. 17.4	0. 59. 45.38	43.93	— 1.45	86. 34. 10.15	5.40	— 4.75
23. 8. 48. 16.0	0. 58. 6.91	5.65	— 1.26	86. 42. 23.85	18.90	— 4.95
25. 8. 40. 6.4	0. 57. 49.06	47.43	— 1.63	86. 43. 47.72	43.50	— 4.22
27. 8. 31. 57.6	0. 57. 32.00	30.61	— 1.39	86. 44. 59.48	58.50	— 0.98
28. 8. 27. 53.9	0. 57. 24.16	22.74	— 1.42	86. 45. 37.48	32.40	— 5.08
29. 8. 23. 51.0	0. 57. 16.64	15.23	— 1.41	86. 46. 6.97	3.80	— 3.17
Dec. 5. 7. 59. 28.7	0. 56. 39.25	38.03	— 1.22	86. 48. 24.30	19.60	— 4.70
7. 7. 51. 36.7	0. 56. 30.01	28.72	— 1.29	86. 48. 47.90	44.60	— 3.30
12. 7. 31. 41.2	0. 56. 14.11	12.37	— 1.74	86. 49. 6.31	1.50	— 4.81
19. 7. 4. 3.5	0. 56. 7.76	6.34	— 1.42	86. 47. 39.80	36.10	— 3.70
20. 7. 0. 8.2	0. 56. 8.38	7.09	— 1.29	.....	...	...
23. 6. 48. 25.3	0. 56. 13.17	11.75	— 1.42	86. 45. 52.86	50.60	— 2.26

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF URANUS.

Jan. 7. 6. 15. 43.1	1. 23. 31.51	41.22	+ 9.71	81. 49. 54.14	1.10	—53.04
Aug. 21. 15. 52. 50.1	1. 53. 14.74	25.25	+10.51	78. 57. 94.11	41.40	—52.71
26. 15. 32. 53.3	1. 52. 57.43	68.17	+10.74	78. 59. 72.85	21.70	—51.15
Sep. 2. 15. 4. 50.9	1. 52. 26.22	37.16	+10.94	79. 2. 76.13	20.30	—55.83
6. 14. 48. 46.2	1. 52. 5.12	15.90	+10.78	79. 4. 75.54	21.60	—53.94
7. 14. 44. 44.4	1. 51. 59.26	70.20	+10.94	79. 4. 106.39	54.10	—52.29
10. 14. 32. 38.8	1. 51. 41.33	52.23	+10.90	79. 6. 91.50	36.10	—55.41

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of URANUS—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Sep. 12. 14. 24. 34.2	1. 51. 28.49	39.54	+11.05	79. 7.102.97	47.90	-55.07
13. 14. 20. 32.0	1. 51. 22.11	32.99	+10.88	79. 8. 80.08	25.00	-55.08
14. 14. 16. 29.5	1. 51. 15.58	26.31	+10.73	79. 9. 56.61	2.80	-53.81
25. 13. 31. 53.1	1. 49. 53.89	64.89	+11.00	79. 16. 98.80	41.40	-57.40
Oct. 1. 13. 7. 28.3	1. 49. 4.37	15.22	+10.85	79. 21. 74.51	20.10	-54.41
7. 12. 43. 0.6	1. 48. 11.95	22.75	+10.80	79. 26. 69.02	13.80	-55.22
11. 12. 26. 40.7	1. 47. 35.62	46.61	+10.99	79. 29. 94.08	36.00	-58.08
12. 12. 22. 35.8	1. 47. 26.61	37.46	+10.85	79. 30. 81.62	27.10	-54.52
15. 12. 10. 20.5	1. 46. 58.95	69.84	+10.89	79. 33. 54.57	1.40	-53.17
16. 12. 6. 15.5	1. 46. 49.80	60.58	+10.78	79. 33. (96.40)	53.10	(-43.30)
21. 11. 45. 49.1	1. 46. 2.86	14.05	+11.19	79. 38. 66.60	12.60	-54.00
28. 11. 17. 13.3	1. 44. 58.23	68.98	+10.75	79. 44. 70.13	15.00	-55.13
29. 11. 13. 8.1	1. 44. 48.87	59.76	+10.89	79. 45. 61.90	6.30	-55.60
Nov. 4. 10. 48. 36.6	.....	...	...	79. 50. 65.48	9.30	-56.18
8. 10. 32. 19.6	1. 43. 19.24	29.93	+10.69	79. 53. 79.91	25.10	-54.81
11. 10. 20. 6.1	1. 42. 53.40	64.20	+10.80	79. 55. 103.20	47.60	-55.60
14. 10. 7. 53.5	1. 42. 28.41	39.21	+10.80	79. 58. 62.57	5.80	-56.77
25. 9. 23. 14.9	.....	...	...	80. 5.103.19	46.50	-56.69
27. 9. 15. 8.5	1. 40. 51.25	61.71	+10.46	80. 7. 54.04	1.30	-52.74
28. 9. 11. 6.9	1. 40. 44.33	55.07	+10.74	80. 7. 93.39	37.60	-55.79
29. 9. 7. 4.6	1. 40. 37.90	48.56	+10.66	80. 8. 67.91	13.00	-54.91
Dec. 5. 8. 42. 53.1	1. 40. 1.79	12.57	+10.78	80. 11. 82.11	27.90	-54.21
7. 8. 34. 50.8	1. 39. 51.22	61.81	+10.59	80. 12. 81.04	25.70	-55.34
12. 8. 14. 47.4	1. 39. 27.36	37.77	+10.41	80. 14. 89.01	33.50	-55.51
19. 7. 46. 49.6	1. 39. 0.84	11.37	+10.53	80. 16. 106.42	50.30	-56.12
20. 7. 42. 50.8	1. 38. 57.98	68.31	+10.33	80. 17. 59.57	5.70	-53.87

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE.

Aug. 12. 13. 8. 8.0	22. 32. 36.59	36.66	+ 0.07	100. 1. 29.93	26.67	- 3.26
19. 12. 39. 55.0	22. 31. 54.80	54.83	+ 0.03	100. 5. 40.34	39.69	- 0.65
21. 12. 31. 51.0	22. 31. 42.63	42.63	0.00	100. 6. 53.28	53.05	- 0.23
23. 12. 23. 47.1	22. 31. 30.28	30.35	+ 0.07	100. 8. 7.03	6.69	- 0.34
24. 12. 19. 44.8	22. 31. 24.11	24.20	+ 0.09	100. 8. 44.63	43.56	- 1.07
29. 11. 59. 34.3	22. 30. 53.03	53.28	+ 0.25	100. 11. 49.30	48.14	- 1.16
30. 11. 55. 32.6	22. 30. 47.15	47.09	- 0.06	100. 12. 26.02	25.00	- 1.02
Sep. 2. 11. 43. 26.2	22. 30. 28.42	28.53	+ 0.11	100. 14. 17.90	15.26	- 2.64
4. 11. 35. 22.2	22. 30. 16.30	16.19	- 0.11	100. 15. 28.82	28.29	- 0.53
6. 11. 27. 17.9	22. 30. 3.73	3.90	+ 0.17	100. 16. 41.46	40.87	- 0.59
7. 11. 23. 15.7	22. 29. 57.42	57.79	+ 0.37	100. 17. 17.12	16.92	- 0.20
11. 11. 7. 8.4	22. 29. 33.66	33.58	- 0.08	100. 19. 40.88	39.34	- 1.54
12. 11. 3. 6.3	22. 29. 27.45	27.60	+ 0.15	100. 20. 14.30	14.43	+ 0.13
Oct. 2. 9. 42. 38.8	22. 27. 37.81	38.01	+ 0.20	100. 30. 49.21	49.90	+ 0.69
3. 9. 38. 38.0	22. 27. 32.90	33.20	+ 0.30	100. 31. 17.05	17.45	+ 0.40
5. 9. 30. 37.2	22. 27. 23.87	23.81	- 0.06	100. 32. 10.83	11.10	+ 0.27
7. 9. 22. 36.5	22. 27. 15.00	14.74	- 0.26	100. 33. 1.28	2.73	+ 1.45
8. 9. 18. 36.0	22. 27. 10.39	10.34	- 0.05	100. 33. 27.34	27.76	+ 0.42
12. 9. 2. 35.7	22. 26. 53.68	53.64	- 0.04	100. 35. 3.48	2.29	- 1.19
15. 8. 50. 36.5	22. 26. 42.09	42.11	+ 0.02	100. 36. 5.17	7.12	+ 1.95
17. 8. 42. 37.5	22. 26. 34.89	34.91	+ 0.02	100. 36. 49.26	47.32	- 1.94

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1850. d h m s	h m s	s	s	° ' "	"	"
Oct. 18. 8. 38. 38.2	22. 26. 31.55	31.47	— 0.08	100. 37. 8.18	6.51	— 1.67
21. 8. 26. 40.8	22. 26. 21.86	21.77	— 0.09	100. 37. 58.69	60.34	+ 1.65
26. 8. 6. 47.5	22. 26. 8.02	7.79	— 0.23	100. 39. (26.14)	16.98	(— 9.16)
29. 7. 54. 52.6	22. 26. 0.82	0.77	— 0.05	100. 39. 54.19	54.89	+ 0.70
31. 7. 46. 56.6	22. 25. 56.67	56.67	0.00	100. 40. 16.91	16.72	— 0.19
Nov. 4. 7. 31. 6.5	22. 25. 50.19	49.91	— 0.28	100. 40. 51.71	51.79	+ 0.08
11. 7. 3. 27.9	22. 25. 42.93	42.90	— 0.03	100. 41. 23.05	25.01	+ 1.96
14. 6. 51. 39.2	22. 25. 41.88	41.80	— 0.08	100. 41. 30.38	28.15	— 2.23
23. 6. 16. 19.5	22. 25. 45.44	45.50	+ 0.06	100. 40. 57.83	56.95	— 0.88
25. 6. 8. 30.0	.....	...	...	100. 40. 43.91	41.74	— 2.17
28. 5. 56. 46.7	22. 25. 52.15	52.09	— 0.06	100. 40. 12.75	13.31	+ 0.56
29. 5. 52. 52.5	22. 25. 53.91	53.80	— 0.11	100. 40. 2.04	2.33	+ 0.29
Dec. 7. 5. 21. 43.3	22. 26. 12.01	12.11	+ 0.10	100. 38. 8.97	7.81	— 1.16

INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.	Mean Day, 1850.	Error in R. A.	Number of Obs.	Error in N.P.D.	Number of Obs.	Error in Ecliptic N. P. D.
Jan. 5 to Feb. 7	January 29	— 0.05	5	— 1.27	5	— 1.413
Feb. 13 to March 6	February 24	— 0.22	7	+ 0.03	6	— 1.171
March 12 to April 5	March 23	— 0.25	6	+ 0.01	5	— 1.484
April 23 to May 2	April 28	— 0.18	5	— 0.73	4	— 1.541
May 9 to May 31	May 22	— 0.21	7	— 0.34	8	— 0.942
June 2 to June 27	June 16	— 0.24	15	— 1.29	15	— 1.414
July 1 to July 24	July 15	— 0.18	11	— 1.31	11	— 0.882
Aug. 5 to Aug. 30	August 21	— 0.12	10	— 0.28	9	+ 0.343
Sep. 3 to Sep. 30	September 20	— 0.11	11	— 1.79	10	— 0.984
Oct. 4 to Oct. 28	October 16	— 0.11	12	— 2.23	12	— 1.463
Nov. 5 to Nov. 28	November 15	— 0.15	9	— 2.86	10	— 2.226
Dec. 5 to Dec. 28	December 19	— 0.25	8	— 0.47	7	— 0.397

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,
 $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$,
 and altering the number of observations so as to make the assumed weights of opposite parts of the year equal :

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} - 1''.413 = + 0.6334 x - 0.7738 y + z \\ - 1.171 = + 0.9104 x - 0.4136 y + z \\ - 1.484 = + 0.9990 x + 0.0439 y + z \end{array} \right. & \begin{array}{l} \text{Weight 7} \\ ,, 9 \\ ,, 8 \end{array} \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 1.541 = + 0.7900 x + 0.6131 y + z \\ - 0.942 = + 0.4851 x + 0.8745 y + z \\ - 1.414 = + 0.0889 x + 0.9960 y + z \end{array} \right. & \begin{array}{l} ,, 6 \\ ,, 7 \\ ,, 15 \end{array} \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 0.882 = - 0.3838 x + 0.9234 y + z \\ + 0.343 = - 0.8482 x + 0.5297 y + z \\ - 0.984 = - 0.9988 x + 0.0497 y + z \end{array} \right. & \begin{array}{l} ,, 8 \\ ,, 8 \\ ,, 8 \end{array} \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 1.463 = - 0.9220 x - 0.3872 y + z \\ - 2.226 = - 0.6044 x - 0.7967 y + z \\ - 0.397 = - 0.0471 x - 0.9989 y + z \end{array} \right. & \begin{array}{l} ,, 12 \\ ,, 8 \\ ,, 8 \end{array}
 \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1850.

Equations multiplied by the Weights.

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} - 9.891 = + 4.4338 x - 5.4166 y + 7 z \\ - 10.539 = + 8.1936 x - 3.7224 y + 9 z \\ - 11.872 = + 7.9920 x + 0.3512 y + 8 z \end{array} \right. \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 9.246 = + 4.7400 x + 3.6786 y + 6 z \\ - 6.594 = + 3.3957 x + 6.1215 y + 7 z \\ - 21.210 = + 1.3335 x + 14.9400 y + 15 z \end{array} \right. \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 7.056 = - 3.0704 x + 7.3872 y + 8 z \\ + 2.744 = - 6.7856 x + 4.2376 y + 8 z \\ - 7.872 = - 7.9904 x + 0.3976 y + 8 z \end{array} \right. \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 17.556 = - 11.0640 x - 4.6464 y + 12 z \\ - 17.808 = - 4.8352 x - 6.3736 y + 8 z \\ - 3.176 = - 0.3768 x - 7.9912 y + 8 z \end{array} \right.
 \end{array}$$

New Equations formed by adding and subtracting those above, as indicated below :

$$\begin{array}{lcl}
 \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\
 - 120.076 = - 4.0338 x + 8.9635 y + 104 z \\
 \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\
 - 18.628 = + 64.2110 x + 22.9411 y \\
 \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\
 - 21.608 = + 12.7206 x - 64.5615 y
 \end{array}$$

Solution of these Equations :

$$\begin{array}{lcl}
 x & = & - 0''.383 \\
 y & = & + 0.259 \\
 z & = & - 1.192
 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic N. P. D. is negative, or, the assumed Ecliptic is north of the Sun's true path, by $0''.383$; and therefore that the right ascensions of all stars ought to be diminished by $\frac{0''.383}{15 \times \sin 23^\circ. 28'} = 0''.064$.

The second term indicates that the obliquity assumed in the Nautical Almanac ought to be increased by $0''.259$.

The third term indicates that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $2''.384$.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1850.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 5 to Feb. 7	5	5	January 29	— 0'05	— 1'27	— 0'35	— 1'41
Feb. 13 to March 6	7	6	February 24	— 0'22	+ 0'03	— 3'04	— 1'17
March 12 to April 5	6	5	March 23	— 0'25	+ 0'01	— 3'44	— 1'48
April 23 to May 2	5	4	April 28	— 0'18	— 0'73	— 2'24	— 1'54
May 9 to May 31	7	8	May 22	— 0'21	— 0'34	— 2'82	— 0'94
June 2 to June 27	15	15	June 16	— 0'24	— 1'29	— 3'25	— 1'41
July 1 to July 24	11	11	July 15	— 0'18	— 1'31	— 2'69	— 0'88
Aug. 5 to Aug. 30	10	9	August 21	— 0'12	— 0'28	— 1'75	+ 0'34
Sep. 3 to Sep. 30	11	10	September 20	— 0'11	— 1'79	— 2'23	— 0'98
Oct. 4 to Oct. 28	12	12	October 16	— 0'11	— 2'23	— 2'34	— 1'46
Nov. 5 to Nov. 28	9	10	November 15	— 0'15	— 2'86	— 2'79	— 2'23
Dec. 5 to Dec. 28	8	7	December 19	— 0'25	— 0'47	— 3'45	— 0'40

MERCURY.

April 27	1	1	April 27	+ 0'08	— 7'46	+ 3'21	— 6'83
May 13 to May 21	3	2	May 18	+ 0'04	— 2'93	+ 0'79	— 2'88
Aug. 5 to Aug. 16	2	2	August 11	+ 0'15	+ 1'11	+ 2'45	+ 0'27
Sep. 12 to Sep. 13	2	2	September 13	— 0'46	+ 3'10	— 5'10	+ 5'49
Nov. 5 to Nov. 10	3	2	November 8	+ 0'24	— 1'07	+ 2'96	— 2'19

VENUS.

Jan. 4	1	1	January 5	— 0'47	— 0'65	— 6'46	— 0'71
Feb. 3	1	1	February 4	+ 0'17	— 1'32	+ 2'67	— 0'64
March 27	1	1	March 27	— 0'03	— 4'29	+ 1'26	— 4'13
April 18 to April 29	4	4	April 25	+ 0'21	— 2'60	+ 3'61	— 1'67
May 2 to May 31	6	7	May 19	+ 0'22	— 1'98	+ 3'19	— 1'70
June 3 to June 26	9	10	June 17	— 0'02	— 0'44	— 0'35	— 0'39
July 13 to Aug. 13	3	3	July 31	— 0'33	— 1'21	— 5'01	+ 0'79

VENUS—concluded.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1850.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Aug. 20 to Sep. 14	7	7	September 2	— 0.54	— 5.71	— 9.53	— 2.34
Oct. 15 to Oct. 21	3	3	October 17	— 0.79	— 5.55	— 11.39	— 3.89
Nov. 11 to Nov. 29	3	3	November 23	— 1.97	— 6.39	— 26.31	— 6.78
Dec. 6 to Dec. 27	2	2	December 17	— 2.80	— 8.43	— 39.39	— 6.66

MARS.

Jan. 4 to Jan. 30	5	5	January 14	— 1.58	— 14.42	— 19.88	— 16.27
Feb. 6 to Feb. 22	7	7	February 13	— 1.10	— 9.01	— 14.10	— 10.11
March 1 to March 16	7	8	March 10	— 0.84	— 7.38	— 11.21	— 7.56

VESTA.

Jan. 4 to Jan. 23	3	3	January 12	+ 2.02	+ 18.59	+ 30.17	+ 14.45
Feb. 6 to Feb. 27	6	6	February 14	+ 1.86	+ 11.85	+ 26.23	+ 9.39
March 7 to March 25	6	6	March 14	+ 1.67	+ 10.17	+ 23.39	+ 7.96

JUNO.

March 15	1	1	March 16	+ 2.18	+ 23.67	+ 39.44	+ 10.07
April 17 to April 18	2	2	April 18	+ 2.64	+ 15.31	+ 43.00	— 1.03

PALLAS.

Aug. 3 to Aug. 29	6	8	August 21	— 0.35	— 22.88	+ 3.35	— 23.26
Sep. 2 to Sep. 12	6	6	September 7	— 0.52	— 25.25	+ 1.11	— 26.38
Sep. 30 to Oct. 16	3	1	October 8	— 0.66	— 23.10	— 2.35	— 25.03

CERES.

Aug. 21 to Sep. 13	7	8	September 7	+ 12.82	— 95.65	+ 218.72	— 11.29
Sep. 25 to Oct. 16	8	9	October 7	+ 13.32	— 86.45	+ 219.81	+ 0.75

CERES—concluded.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1850.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Oct. 21 to Nov. 14	5	5	October 31	+ 12.27	— 75.32	+ 199.20	+ 4.35
Nov. 19 to Dec. 7	5	6	November 27	+ 10.22	— 63.81	+ 166.09	+ 2.55

JUPITER.

Jan. 4 to Jan. 30	4	4	January 17	— 0.85	— 6.64	— 14.31	— 1.06
Feb. 6 to Feb. 26	7	7	February 16	— 0.96	— 5.24	— 15.25	+ 0.84
March 4 to March 16	7	7	March 10	— 1.09	— 5.62	— 17.25	+ 1.20
March 21 to April 20	9	8	April 2	— 1.05	— 5.16	— 16.41	+ 1.30
April 22 to May 13	7	7	April 28	— 0.96	— 4.85	— 15.04	+ 1.01
Dec. 15 to Dec. 29	5	5	December 22	— 1.10	— 2.85	— 16.27	+ 3.57

SATURN.

Jan. 7	1	1	January 7	— 1.41	+ 0.53	— 19.64	— 7.93
Aug. 18 to Sep. 2	7	7	August 26	— 1.42	— 3.10	— 18.52	— 10.81
Sep. 6 to Oct. 1	11	11	September 18	— 1.35	— 4.03	— 17.18	— 11.35
Oct. 5 to Oct. 29	10	10	October 17	— 1.39	— 3.07	— 18.07	— 10.76
Nov. 2 to Nov. 29	11	11	November 17	— 1.45	— 4.23	— 18.42	— 12.27
Dec. 5 to Dec. 23	6	5	December 14	— 1.40	— 3.75	— 17.89	— 11.55

URANUS.

Jan. 7	1	1	January 7	+ 9.71	— 53.04	+ 153.59	+ 4.38
Aug. 21 to Sep. 14	9	9	September 6	+ 10.83	— 53.92	+ 168.33	+ 5.52
Sep. 25 to Oct. 21	8	7	October 11	+ 10.92	— 55.26	+ 170.20	+ 5.44
Oct. 28 to Nov. 14	5	6	November 6	+ 10.79	— 55.68	+ 168.73	+ 5.07
Nov. 25 to Dec. 20	8	9	December 7	+ 10.56	— 55.02	+ 165.48	+ 4.95

NEPTUNE.

Aug. 12 to Aug. 30	7	7	August 23	+ 0.06	— 1.10	+ 1.23	— 0.70
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NEPTUNE—concluded.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1850.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude	Error in E. P. D.
Sep. 2 to Sep. 12	6	6	September 7	+ 0'10	— 0'90	+ 1'71	— 0'29
Oct. 2 to Nov. 4	14	13	October 16	— 0'04	+ 0'20	— 0'62	— 0'03
Nov. 11 to Dec. 7	6	7	November 24	— 0'02	— 0'52	— 0'09	— 0'59

ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.

MERCURY.

Day, 1850.	Errors of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.					Error of Tables in Hel. E. P. D.
April 27	+ 3'21 = + 0'197 δL + 102830 $\delta \rho$ + 0'803 δl — 31463 δr					— 27'29
May 18	+ 0'79 = — 0'191 + 242622 + 1'190 — 97253					— 5'59
August 11	+ 2'45 = + 0'254 + 77750 + 0'747 — 29745					+ 0'92
September 13	— 5'10 = + 0'062 + 213025 + 0'937 — 95989					+ 11'55
November 8	+ 2'96 = + 0'261 — 79903 + 0'740 + 31880					— 7'24

VENUS.

January 5	— 6'46 = + 0'419 δL — 40062 $\delta \rho$ + 0'581 δl + 29544 δr					— 1'61
February 4	+ 2'67 = + 0'424 — 18571 + 0'577 + 13672					— 1'49
March 27	+ 1'26 = + 0'419 + 17731 + 0'581 — 12892					— 9'74
April 25	+ 3'61 = + 0'411 + 40624 + 0'590 — 29112					— 3'85
May 19	+ 3'19 = + 0'399 + 62047 + 0'601 — 43988					— 3'75
June 17	— 0'35 = + 0'377 + 92017 + 0'623 — 64963					— 0'79
July 31	— 5'01 = + 0'317 + 150152 + 0'683 — 107056					+ 1'28
September 2	— 9'53 = + 0'221 + 211550 + 0'779 — 152560					— 3'01
October 17	— 11'39 = — 0'176 + 347128 + 1'173 — 252971					— 3'15
November 23	— 26'31 = — 1'540 + 434580 + 2'538 — 317475					— 3'13
December 17	— 39'39 = — 2'722 — 24742 + 3'722 + 17934					— 2'45

MARS.				
Day, 1850.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.			
				Error of Tables in Hel. E. P. D.
January 14	"	"	"	"
	$-19.88 = + 2.155 \delta L + 106260 \delta \rho - 1.156 \delta l - 17284 \delta r$			$- 7.05$
February 13	$-14.10 = + 1.460 + 120834 - 0.461 - 19901$			$- 5.80$
March 10	$-11.21 = + 1.124 + 105036 - 0.125 - 17384$			$- 5.39$
VESTA.				
January 12	"	"	"	"
	$+ 30.17 = + 1.641 \delta L + 2465 \delta \rho$			$+ 8.82 - 801 \delta \rho$
February 14	$+ 26.23 = + 1.432 + 33205$			$+ 6.55 - 1453$
March 14	$+ 23.39 = + 1.166 + 40161$			$+ 6.76 - 1409$
JUNO.				
March 16	$+ 39.44 = + 1.404 \delta L - 14109 \delta \rho$			$+ 6.60 - 2692 \delta \rho$
April 18	$+ 43.00 = + 1.456 + 6396$			$- 0.40 - 3353$
PALLAS.				
August 21	$+ 3.35 = + 1.455 \delta L - 1108 \delta \rho$			$-17.23 - 7367 \delta \rho$
September 7	$+ 1.11 = + 1.422 + 9012$			$-19.54 - 6521$
October 8	$- 2.35 = + 1.233 + 20352$			$-20.27 - 3017$
CERES.				
September 7	$+218.72 = + 1.485 \delta L - 13360 \delta \rho$			$- 2.89 + 6498 \delta \rho$
October 7	$+219.81 = + 1.507 + 9454$			$- 2.89 + 6528$
October 31	$+199.20 = + 1.356 + 23179$			$- 5.00 + 5379$
November 27	$+166.09 = + 1.145 + 28080$			$- 7.32 + 3352$
JUPITER.				
January 17	"	"	"	"
	$-14.31 = + 1.115 \delta L - 6440 \delta \rho - 0.115 \delta l + 35487 \delta r$			$- 0.94$
February 16	$-15.25 = + 1.202 - 3274 - 0.202 + 18014$			$+ 0.70$
March 10	$-17.25 = + 1.224 + 230 - 0.224 - 1311$			$+ 0.98$

JUPITER—concluded.

Day, 1850.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
April 2	$-16.41 = +1.197 \delta L + 3828 \delta \rho - 0.197 \delta l - 20824 \delta r$	+ 1.08
April 28	$-15.04 = +1.122 \quad + 6476 \quad - 0.122 \quad - 35050$	+ 0.89
December 22	$-16.27 = +0.943 \quad - 6138 \quad + 0.057 \quad + 34120$	+ 3.73

SATURN.

January 7	$-19.64 = +0.974 \delta L + 2149 \delta \rho + 0.026 \delta l - 20691 \delta r$	- 8.10
August 26	$-18.52 = +1.079 \quad - 1889 \quad - 0.079 \quad + 17603$	- 9.99
September 18	$-17.18 = +1.109 \quad - 1066 \quad - 0.109 \quad + 9967$	- 10.23
October 17	$-18.07 = +1.118 \quad + 308 \quad - 0.118 \quad - 2890$	- 9.62
November 17	$-18.42 = +1.088 \quad + 1637 \quad - 0.089 \quad - 15442$	- 11.25
December 14	$-17.89 = +1.041 \quad + 2255 \quad - 0.041 \quad - 21431$	- 11.04

URANUS.

January 7	$+153.59 = +1.005 \delta L + 509 \delta \rho - 0.005 \delta l - 10380 \delta r$	+ 4.35
September 6	$+168.33 = +1.036 \quad - 388 \quad - 0.036 \quad + 7798$	+ 5.32
October 11	$+170.20 = +1.052 \quad - 105 \quad - 0.052 \quad + 2078$	+ 5.17
November 6	$+168.73 = +1.050 \quad + 149 \quad - 0.050 \quad - 3007$	+ 4.83
December 7	$+165.48 = +1.034 \quad + 394 \quad - 0.034 \quad - 8032$	+ 4.78

NEPTUNE.

August 23	$+1.23 = +1.035 \delta L - 27 \delta \rho - 0.035 \delta l + 727 \delta r$	- 0.68
September 7	$+1.71 = +1.034 \quad + 37 \quad - 0.034 \quad - 1121$	- 0.28
October 16	$-0.62 = +1.023 \quad + 174 \quad - 0.023 \quad - 5249$	- 0.03
November 24	$-0.09 = +1.001 \quad + 224 \quad - 0.001 \quad - 6884$	- 0.59

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE.

Day, 1850.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1850.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Jan. 1	+ 9'27	- 5'82	H	+ 6'51	- 5'61	E	April 17	"	"		+ 12'31	+ 2'22	E
4	+ 10'48	- 4'94	D	+ 8'22	- 6'06	E	18				+ 6'05	- 4'62	R
5	+ 9'39	- 5'58	H	+ 10'83	- 1'11	R	20				+ 17'82	- 7'53	E
6	+ 7'87	- 2'15	R	+ 3'76	- 2'78	D	21	+ 11'54	- 8'88	R	+ 15'02	- 7'22	R
7				- 1'27	+ 2'02	E	22	+ 10'72	- 7'51	H	+ 12'33	- 9'03	D
23	+ 4'02	- 0'27	D	+ 4'56	- 0'05	R	23				+ 7'52	- 5'70	R
25				+ 10'15	- 3'07	R	24	+ 4'89	- 3'88	M	+ 8'73	- 5'20	R
26	+ 14'06	- 5'61	E	+ 17'23	- 4'95	D	25	+ 4'93	- 6'41	J H	+ 7'72	- 7'01	D
27				+ 15'78	- 3'55	R	26				+ 3'95	- 6'06	R
28				+ 19'03	- 1'17	E	27	+ 4'65	- 5'71	W E	+ 3'72	- 4'41	D
30	+ 11'72	- 3'77	E	+ 9'83	- 5'82	D	28	+ 7'57	+ 1'99	R	+ 6'04	- 0'53	R
							29	+ 2'09	+ 1'67	E	+ 1'40	+ 3'61	D
Feb. 1	+ 8'71	- 2'87	E	+ 10'46	- 3'76	D	May 1	+ 3'82	+ 4'80	E	+ 1'96	+ 4'97	D
2				+ 10'15	+ 0'94	D	2	+ 6'10	+ 8'39	D	+ 3'16	+ 3'06	R
3	+ 11'61	+ 4'14	H	+ 9'97	+ 2'47	E	3				+ 5'11	+ 9'50	E
4				+ 5'87	+ 1'02	R	4				- 2'98	+ 9'54	D
5	+ 4'48	+ 7'85	R	+ 6'64	+ 5'11	D	13				+ 10'82	+ 0'69	D
6				- 5'06	+ 4'43	E	15				+ 13'49	- 3'76	R
16	- 0'68	- 4'68	E	+ 0'36	+ 2'29	R	18	+ 5'12	- 8'04	H	+ 5'37	- 10'26	D
18	- 6'04	+ 1'14	R	- 2'86	+ 1'35	E	19	+ 4'82	- 9'63	R	+ 2'39	- 8'90	R
19				- 9'24	+ 2'39	R	20	+ 7'47	- 8'36	H	+ 13'06	- 11'65	E
20				- 0'68	+ 0'85	D	21	+ 8'69	- 5'33	D	+ 7'42	- 7'16	R
21	+ 1'71	- 0'92	H	+ 2'28	- 0'59	R	22	+ 4'87	- 5'21	R	+ 8'71	- 6'49	E
22	+ 7'76	- 0'78	D	+ 12'47	- 3'84	E	23	+ 6'30	- 2'22	E	+ 6'57	- 4'67	D
23	+ 9'45	- 3'64	H	+ 10'23	- 2'59	R	24				+ 6'94	- 3'54	D
24				+ 18'35	- 8'17	E	25				+ 9'68	+ 0'93	E
26	+ 14'64	- 9'66	R	+ 14'23	- 9'10	E	26				+ 10'29	- 1'87	D
27				+ 16'81	- 10'54	R	27	+ 6'51	+ 2'30	J H	+ 6'95	+ 2'70	E
Mar. 2				+ 14'56	- 1'04	D	28	+ 5'68	+ 2'55	M	+ 8'48	- 1'65	D
3	+ 10'47	+ 1'62	D	+ 10'49	- 0'82	R	30	+ 4'00	+ 4'53	J H	+ 3'14	+ 6'32	D
4	+ 9'74	+ 3'24	R	+ 5'08	+ 3'13	E	31	+ 5'52	+ 5'90	R	+ 1'50	+ 2'89	E
5	+ 7'40	+ 5'05	H	+ 6'56	+ 1'25	D							
6				+ 6'23	+ 1'98	E	June 1	+ 2'20	+ 13'54	D	- 2'85	+ 8'77	D
15				- 1'33	+ 0'07	D	2	- 1'36	+ 18'18	R	- 2'68	+ 4'14	E
16				- 1'95	+ 0'34	R	3	- 3'87	+ 13'01	E	- 4'97	+ 6'56	D
17				+ 1'89	+ 2'85	D	5				- 3'00	+ 11'81	E
18	- 1'21	+ 4'39	H	+ 0'08	+ 1'60	R	6				- 6'26	+ 5'56	D
21				+ 5'14	+ 0'40	R	13				+ 25'39	+ 4'22	E
22				+ 8'52	+ 0'72	D	14				+ 23'90	- 3'50	E
23				+ 14'93	- 2'41	R	15				+ 9'64	- 3'42	R
24				+ 11'03	- 7'75	E	16				+ 11'35	- 2'04	E
25	+ 7'12	- 5'27	D	+ 9'40	- 5'10	R	17	+ 4'34	- 5'16	H	+ 6'99	- 2'83	R
26	+ 4'58	- 6'73	E	+ 7'97	- 6'40	D	18	+ 2'73	- 4'04	M	+ 9'11	- 3'09	E
27	+ 6'33	- 5'86	R	+ 8'16	- 8'05	E	19	+ 4'45	- 1'74	H	+ 6'27	+ 2'10	R
28	+ 5'65	- 6'04	D	+ 9'31	- 8'55	R	20	+ 6'04	- 1'38	J H	+ 4'22	- 3'42	E
29	+ 6'43	- 5'05	H	+ 7'74	- 8'42	E	21	+ 4'02	+ 0'09	M	+ 4'65	- 2'57	R
30				+ 1'13	- 2'00	D	22	+ 6'60	+ 3'16	J H	+ 4'01	- 3'51	E
31				+ 7'76	- 3'33	E	23	+ 4'99	+ 4'58	R	+ 4'94	- 0'80	R
April 2	+ 9'27	+ 2'20	H	+ 8'59	+ 3'63	R	24	+ 4'77	+ 3'03	H	+ 9'74	- 2'82	E
4				+ 7'13	+ 5'91	R	25	+ 5'56	+ 3'91	R	+ 5'00	- 5'37	E
15				+ 9'43	+ 3'95	E	27				+ 2'83	- 1'46	E
							29	+ 3'29	+ 6'41	R	+ 0'10	- 1'03	E

The notes marked (M.) refer to the Meridional Observations; those marked [A. and A.] refer to the observations made with the Altitude and Azimuth Instrument.

February 5. [A. and A.] The observation on this day was made during a very heavy gale of wind.

ERRORS of the MOON'S TABULAR PLACE—continued.

Day, 1850.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.	Day, 1850.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
June 30	"	"		+ 5.54	+ 2.95	R	Sep. 20	"	"		+ 5.99	+ 5.32	D
July 1	+ 5.77	+ 9.02	J H	+ 7.87	— 0.74	E	21	+ 8.96	+ 3.93	D	+ 7.60	+ 0.63	E
2				+ 11.19	+ 3.22	R	22	+ 8.29	+ 7.07	E	+ 12.33	+ 2.82	R
4	+ 2.99	+ 10.51	M	+ 5.38	— 1.23	E	23				+ 8.80	+ 3.76	D
5				+ 3.54	+ 0.28	R	24				+ 10.59	+ 2.83	R
13				+ 18.45	+ 4.81	E	25	+ 7.99	+ 0.32	D	+ 7.72	+ 1.62	R
14	+ 11.37	— 5.18	D	+ 15.13	+ 3.11	D	26	+ 8.24	+ 1.19	R	+ 5.72	+ 1.58	E
15	+ 13.00	— 4.35	E	+ 12.77	— 0.99	R	27	+ 8.75	+ 0.83	E	+ 8.36	+ 0.02	D
16				+ 11.62	+ 4.71	D	28				+ 6.62	— 3.31	D
18				+ 5.05	+ 9.81	R	29				+ 6.56	— 6.41	R
21	— 0.58	+ 5.46	R	+ 3.35	+ 1.87	R	30				+ 7.87	— 8.29	R
22	+ 3.51	+ 2.75	H	+ 4.81	— 1.11	D	Oct. 1				+ 0.16	— 5.81	D
24				+ 3.31	+ 0.38	R	8				+ 36.31	+ 0.70	E
25	+ 6.35	+ 3.84	R	+ 4.50	— 2.43	E	11	+ 9.57	— 5.51	H	+ 19.93	— 7.00	E
26	(+ 5.68)	(+ 2.83)	G	+ 6.23	— 2.57	D	12	+ 4.14	— 0.26	R	+ 8.98	+ 0.72	D
27	+ 7.17	+ 3.28	E	+ 6.04	— 0.89	D	14	+ 5.83	+ 4.67	F	+ 5.96	+ 9.55	R
29				+ 9.94	— 2.57	D	15	+ 0.15	+ 6.28	M	+ 1.29	+ 4.34	D
30				+ 10.68	— 4.93	D	16	+ 4.16	+ 4.28	H	+ 4.65	+ 7.46	R
Aug. 3	(+ 5.46)	(— 22.12)	M	+ 6.70	— 7.01	D	17	(+ 0.25)	(+ 12.27)	R	+ 0.52	+ 5.64	D
4				+ 0.91	— 9.79	R	18	+ 7.66	+ 5.72	F	+ 4.53	+ 7.23	D
11				+ 26.69	— 0.61	D	19				+ 9.58	+ 7.10	R
12				+ 16.70	+ 6.50	R	20	+ 14.93	+ 5.79	D	+ 13.35	+ 6.60	D
13	+ 14.02	— 2.64	J H	+ 15.58	+ 4.52	D	21	+ 13.72	+ 6.66	F	+ 12.58	+ 3.24	R
14				+ 12.97	— 0.78	R	22	+ 16.68	+ 5.01	J H	+ 14.04	+ 4.12	D
15	+ 5.77	— 3.02	J H	+ 6.63	+ 6.05	R	25	+ 9.60	— 2.72	E	+ 12.64	— 1.65	R
16				+ 8.47	+ 3.09	R	26	+ 10.88	+ 0.27	D	+ 13.88	— 4.78	R
17				+ 2.90	+ 9.97	R	28	+ 10.84	— 8.12	R	+ 7.83	— 8.19	D
18	+ 1.64	+ 5.39	D	+ 8.93	+ 1.54	R	29				+ 9.11	— 9.76	E
19	+ 0.09	+ 3.56	E	+ 8.93	+ 1.54	R	30				+ 8.19	— 8.83	R
20	+ 2.73	+ 3.70	D	+ 2.55	+ 2.71	R	Nov. 6				+ 31.91	+ 0.89	E
21	+ 4.32	+ 4.45	J H	+ 1.60	+ 1.17	E	7				+ 27.66	— 0.12	D
22	+ 3.19	+ 3.55	R	+ 3.56	— 2.41	D	8				+ 17.40	+ 2.79	R
23	+ 5.08	+ 4.75	J H	+ 3.69	— 3.08	E	11	+ 1.85	+ 8.41	F	+ 2.25	+ 4.79	D
24	+ 8.20	+ 4.04	R	+ 7.14	— 1.82	D	12	+ 1.89	+ 4.10	E	+ 1.01	+ 6.06	R
26	+ 6.13	+ 2.05	E	+ 12.80	— 7.03	R	13	— 0.64	+ 5.02	R	+ 2.20	+ 8.58	D
27				+ 6.11	+ 7.36	D	14	+ 3.69	+ 5.03	D	+ 5.73	+ 7.81	E
28	+ 14.48	+ 1.88	J H	+ 8.43	+ 2.66	D	15				+ 2.20	+ 5.93	E
29	+ 11.46	— 0.43	R	+ 9.42	— 10.28	E	16				+ 9.69	+ 9.67	D
30	+ 6.98	— 2.42	J H	+ 13.65	— 8.47	D	17				+ 17.15	+ 5.28	E
31				+ 4.65	— 9.69	E	19				+ 20.55	— 0.61	E
Sep. 2				+ 1.98	— 17.25	E	21				+ 13.95	— 0.99	R
4				+ 6.17	— 19.43	D	22				+ 15.04	— 3.24	D
8				+ 27.64	— 6.17	D	23				+ 14.94	— 7.40	R
10				+ 23.39	+ 0.82	E	24	+ 15.73	— 10.32	F	+ 14.21	— 11.04	D
11	+ 19.65	— 6.78	W E	+ 15.59	+ 0.80	D	25	+ 15.12	— 9.93	E	+ 11.39	— 11.21	R
12	+ 11.95	— 1.46	G	+ 10.70	— 0.97	E	27				+ 19.48	— 10.79	R
13				+ 6.43	+ 1.59	D	28	+ 19.92	— 9.24	R	+ 19.28	— 10.83	E
14	+ 3.59	+ 1.40	R	+ 5.22	+ 0.08	D	29				+ 15.65	— 3.97	D
17				+ 2.00	+ 3.76	D	Dec. 7				+ 14.31	+ 2.05	E
18	+ 1.22	+ 0.49	D	+ 8.25	+ 5.91	E	12	+ 3.40	+ 2.75	F	+ 2.66	+ 3.69	R

July 26 and August 3. (M.) On these days the Moon was much clouded, and the observations are useless.

October 17. (M.) The observation in N. P. D. seems unaccountably wrong.

October 21. (M.) See the note to the R. A. observation on page [67].

November 29. [A. and A.] The observation in Azimuth depends entirely on a transit over one wire.

ERRORS of the MOON'S TABULAR PLACE—concluded.

Day, 1850.	Errors from Observation with Meridional Instruments.		Observer of Transit.	Errors from Observation with Altitude and Azimuth Instrument.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Dec. 13	"	"		+ 2'71	+ 2'08	D
14				+ 9'23	+ 4'78	E
15				+ 14'84	+ 2'01	D
16				+ 14'40	+ 5'65	R
17	+ 10'48	+ 6'43	E	+ 13'42	+ 3'46	D
18				+ 14'32	— 1'20	R
19	+ 18'83	— 2'33	D	+ 14'57	— 1'45	E
20	+ 19'09	— 0'45	H	+ 22'23	— 1'57	R
21	+ 17'49	— 5'28	D	+ 11'04	— 3'94	E
22	+ 16'92	— 6'07	R	+ 15'23	— 9'49	E
23				+ 18'48	— 6'48	D
24				+ 16'12	— 9'87	D
25				+ 21'32	— 5'82	R
27	+ 16'05	— 3'14	M	+ 19'73	— 4'54	R
29				+ 2'52	+ 0'03	E

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

THE DURATION OF TRANSIT

OF

THE MOON'S DIAMETER,

WITH THE

NORTH EQUATOREAL.

1850.

Month and Day. 1850.	Object Observed.	I.	II.	III.	IV.	V. Wire.	Mean of Wires.	Difference of Times of Transit of Limbs.	Observer.
March 27	1 L. 2 L.	s 57.7 10.3	s 7.7 20.2	s 18.0 30.2	s 28.0 40.3	h m s 9.44.38.2 9.46.50.2	h m s 9.44.17.92 9.46.30.24	h m 2. 12.32	R
	1 L. 2 L.	14.8 26.8	25.0 36.8	34.8 47.0	45.0 57.1	9.48.54.7 9.51. 7.1	9.48.34.86 9.50.46.96	2. 12.10	
	1 L. 2 L.	58.2 10.8	8.2 20.9	18.3 31.0	28.3 40.8	9.52.38.7 9.54.50.9	9.52.18.34 9.54.30.88	2. 12.54	
	1 L. 2 L.	54.5 7.0	4.7 17.1	14.8 27.2	24.8 37.2	10. 9.34.8 10.11.47.3	10. 9.14.72 10.11.27.16	2. 12.44	
	1 L. 2 L.	47.5 59.8	57.5 9.8	7.6 19.9	17.6 30.1	10.14.27.7 10.16.40.1	10.14. 7.58 10.16.19.94	2. 12.36	
	1 L. 2 L.	31.2 43.8	41.3 53.8	51.4 3.7	1.4 13.8	10.18.11.6 10.20.24.0	10.17.51.38 10.20. 3.82	2. 12.44	
August 22	1 L. 2 L.	11.0 16.8	21.4 27.0	31.5 37.2	41.8 47.7	19.57.52.2 19.59.58.2	19.57.31.58 19.59.37.38	2. 5.80	R
	1 L. 2 L.	30.2 35.9	40.7 46.3	50.9 56.6	1.2 6.9	20. 2.11.5 20. 4.17.3	20. 1.50.90 20. 3.56.60	2. 5.70	
	1 L. 2 L.	4.2 10.1	14.2 20.4	24.7 30.8	35.1 41.1	20. 7.45.4 20. 9.51.4	20. 7.24.72 20. 9.30.76	2. 6.04	D
	1 L. 2 L.	18.6 24.3	28.9 34.6	39.1 45.0	49.4 55.3	20.11.59.8 20.14. 5.8	20.11.39.16 20.13.45.00	2. 5.84	
	1 L. 2 L.	14.5 20.0	24.6 30.3	34.5 40.6	44.6 51.0	20.18.55.0 20.21. 1.4	20.18.34.64 20.20.40.66	2. 6.02	R
	1 L. 2 L.	58.8 4.7	9.0 14.8	19.1 25.0	29.6 35.4	20.26.40.1 20.28.45.9	20.26.19.32 20.28.25.16	2. 5.84	

On March 27, the correction for defect of illumination is insensible.

On August 22, a correction of $+0^s.01$ is applied to the mean of the observed diameters for defective illumination.

The following Results are obtained, considering the Clock to be 13^s slow on March 27, and $1^m.13^s$ slow on August 22.

	Day of Observation, 1850.	Observed Mean Duration of Transit.	Approximate Sidereal Time.	Tabular Duration of Transit.	Apparent Error of Tables.
	March 27	m s 2. 12.37	h m 10. 2	h s 2. 12.32	s — 0.05
	August 22	2. 5.88	20. 12	2. 5.36	— 0.52

ROYAL OBSERVATORY, GREENWICH.

ECLIPSES, OCCULTATIONS, AND TRANSITS

OF

JUPITER'S SATELLITES,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1850.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1850.

Day of Observa- tion.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instru- ment.	Clock, or Chrono- meter.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Sidereal Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>m s</small>
Feb. 3	II	(a) Ecl. disap. .		H B	E. Eq.	Earn.	6. 40. 35.0	6. 40. 47.1	6. 41. 37.15	9. 46. 47.03	6. 40. 22.2	-1. 14.95
Feb. 3	IV	(b) Ecl. disap. .		H B	E. Eq.	Earn.	7. 3. 1.0	7. 3. 13.1	7. 4. 3.16	10. 9. 9.36	7. 5. 37.6	+1. 34.44
Feb. 3	IV	(c) Ecl. reap. . .		H B	E. Eq.	Earn.	10. 50. 2.0	10. 50. 14.1	10. 51. 4.28	13. 55. 33.29	10. 51. 8.4	+ 4.12
Feb. 10	II	(d) Ecl. disap. .		H B	E. Eq.	Earn.	9. 44. 38.0	9. 44. 9.7	9. 45. 4.52	12. 22. 12.99	9. 43. 56.6	-1. 7.92
Feb. 12	I	(e) Ecl. disap. .		M	E. Eq.	Earn.	9. 58. 15.0	9. 58. 16.3	9. 59. 12.51	12. 28. 26.84	9. 59. 43.6	+ 31.09
Feb. 13	I	(f) Ingress	First contact	R	E. Eq.	Earn.	7. 37. 40.0	7. 37. 44.0	7. 38. 40.81	10. 4. 22.26		
		Ingress	Central bisect.	R	E. Eq.	Earn.	7. 41. 0.0	7. 41. 4.0	7. 42. 0.81	10. 7. 41.72	7. 44. . . .	
		Ingress	Last contact	R	E. Eq.	Earn.	7. 44. 30.0	7. 44. 34.0	7. 45. 30.81	10. 11. 11.14		
Mar. 5	III	Ingress	1/2 on limb	M	E. Eq.	Earn.	7. 44. 20.0	7. 44. 29.8	7. 44. 46.91	8. 51. 49.22		
		Ingress	Central bisect.	M	E. Eq.	Earn.	7. 45. 20.0	7. 45. 29.8	7. 45. 46.91	8. 52. 49.06	7. 49. . . .	
		Ingress	Last contact	M	E. Eq.	Earn.	7. 49. 45.0	7. 49. 54.8	7. 50. 11.91	8. 57. 13.33		
Mar. 5	III	Egress	First contact	R	E. Eq.	Earn.	11. 0. 30.0	11. 0. 39.8	11. 0. 57.04	12. 7. 27.21		
		Egress	Central bisect.	R	E. Eq.	Earn.	11. 4. 0.0	11. 4. 9.8	11. 4. 27.04	12. 10. 56.63	11. 5. . . .	
		Egress	Last contact	R	E. Eq.	Earn.	11. 7. 30.0	11. 7. 39.8	11. 7. 57.04	12. 14. 26.06		
Mar. 12	III	Ingress	First contact	D	E. Eq.	Earn.	11. 29. 30.0	11. 29. 37.6	11. 30. 1.88	12. 8. 55.95	11. 33. . . .	
		Ingress	Last contact	D	E. Eq.	Earn.	11. 36. 0.0	11. 36. 7.6	11. 36. 31.88	12. 15. 24.88		
Mar. 25	I	(g) Ecl. reap. . .		D	E. Eq.	Earn.	7. 46. 36.0	7. 46. 42.5	7. 47. 17.55	7. 35. 41.32	7. 47. 11.4	- 6.15
Mar. 30	I	(h) Ecl. reap. . .		H B	E. Eq.	Earn.	15. 32. 53.0	15. 33. 0.6	15. 33. 40.58	15. 1. 8.42	15. 33. 39.4	- 1.18
	I	(i) Ecl. reap. . .		R	N. Eq.	A ¹	15. 33. 35.0	15. 33. 26.0	15. 34. 5.98	15. 1. 33.75	15. 33. 39.4	- 26.58
April 8	II	Ocult. im. .	First contact	H B	E. Eq.	Earn.	8. 47. 0.0	8. 47. 14.5	8. 48. 2.01	7. 41. 13.15		
		Ocult. im. .	Central bisect.	H B	E. Eq.	Earn.	8. 49. 30.0	8. 49. 44.5	8. 50. 32.01	7. 43. 42.74	8. 53. . . .	
		Ocult. im. .	Totally imm.	H B	E. Eq.	Earn.	8. 52. 10.0	8. 52. 24.5	8. 53. 12.01	7. 46. 22.30		
April 8	I	Ocult. im. .	First contact	R	E. Eq.	Earn.	9. 28. 0.0	9. 28. 14.5	9. 29. 2.03	8. 22. 6.45		
		Ocult. im. .	Central bisect.	R	E. Eq.	Earn.	9. 31. 0.0	9. 31. 14.5	9. 32. 2.03	8. 25. 5.96	9. 34. . . .	
		Ocult. im. .	Totally imm.	R	E. Eq.	Earn.	9. 34. 0.0	9. 34. 14.5	9. 35. 2.03	8. 28. 5.47		
April 24	I	Ecl. reap. . .		M	E. Eq.	Brockbanks 427	11. 50. 47.0	11. 49. 43.5	11. 50. 47.90	9. 40. 34.58	11. 51. 12.3	+ 24.40
		(k) Ecl. reap. . .		H	N. Eq.	A ¹	11. 49. 50.0	11. 49. 57.8	11. 51. 2.20	9. 40. 48.83	11. 51. 12.3	+ 10.10
	II	Egress	Central bisect.	M	E. Eq.	Brockbanks 427	12. 0. 0.0	11. 58. 56.5	12. 0. 0.91	9. 49. 46.09	11. 56. . . .	
		Egress	Last contact	M	E. Eq.	Brockbanks 427	12. 3. 0.0	12. 1. 56.5	12. 3. 0.91	9. 52. 45.60		
June 2	I	(l) Ecl. reap. . .		H B	E. Eq.	Earn.	12. 54. 10.0	12. 54. 15.5	12. 55. 21.47	8. 11. 37.12	12. 54. 55.4	- 26.07

(a) (c) Good.

(b) (d) Pretty good.

(e) Jupiter was clouded immediately before the phenomenon, and again before the satellite had quite disappeared; the observer believes the time, however, to be correct to 10^s.

(f) Tremulous; not good.

(g) The sky was very hazy, but Jupiter and the satellites were steady, and the observation is good.

(h) Pretty good; observed with a high power.

(i) Jupiter tremulous and faint; the satellite reappearing so near the body of Jupiter, the observation was rendered somewhat doubtful, and probably the time is a little too late.

(k) Hazy: the circumstances not very favourable.

(l) Good.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1850—concluded.

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instrument.	Clock, or Chronometer.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Sidereal Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
June 4	II	Ecl. reap...		H B	E. Eq.	Earn.	^h 13. ^m 47. ^s 50	^h 13. ^m 48. ^s 11	^h 13. ^m 48. ^s 19	^h 8. ^m 56. ^s 34	^h 13. ^m 47. ^s 21	^m — ^s 57
June 8	I	Ingress	First contact	R	E. Eq.	Earn.	^h 14. ^m 29. ^s 00	^h 14. ^m 30. ^s 8	^h 14. ^m 30. ^s 22	^h 9. ^m 22. ^s 47		
		Ingress	Central bisect.	R	E. Eq.	Earn.	^h 14. ^m 32. ^s 00	^h 14. ^m 33. ^s 8	^h 14. ^m 33. ^s 22	^h 9. ^m 25. ^s 46	^h 14. ^m 33.	
		Ingress	Last contact	R	E. Eq.	Earn.	^h 14. ^m 35. ^s 00	^h 14. ^m 36. ^s 8	^h 14. ^m 36. ^s 22	^h 9. ^m 28. ^s 46		
June 9	I	Ecl. reap...		M	E. Eq.	Earn.	^h 15. ^m 16. ^s 11	^h 15. ^m 17. ^s 20	^h 15. ^m 17. ^s 35	^h 10. ^m 5. ^s 56	^h 15. ^m 17. ^s 33	^m — ^s 2
June 17	III	Ecl. reap...		H B	E. Eq.	Earn.	^h 15. ^m 19. ^s 35	^h 15. ^m 19. ^s 52	^h 15. ^m 20. ^s 19	^h 9. ^m 37. ^s 12	^h 15. ^m 19. ^s 34	^m — ^s 45
June 24	III	(m) Ecl. disap..		H B	E. Eq.	...	....	^h 16. ^m 42. ^s 48	^h 16. ^m 43. ^s 25	^h 10. ^m 32. ^s 33	^h 16. ^m 42. ^s 44	^m — ^s 41
Dec. 15	I	(n) Ecl. disap..		H B	E. Eq.	Earn.	^h 10. ^m 28. ^s 48	^h 10. ^m 29. ^s 22	^h 10. ^m 30. ^s 5	^h 16. ^m 52. ^s 10	^h 10. ^m 29. ^s 30	^m — ^s 34
Dec. 16	II	(o) Ecl. disap..		E	E. Eq.	Earn.	^h 10. ^m 46. ^s 40	^h 10. ^m 47. ^s 16	^h 10. ^m 48. ^s 1	^h 17. ^m 6. ^s 7	^h 10. ^m 47. ^s 14	^m — ^s 47
Dec. 20	III	(p) Ecl. reap...		D	E. Eq.	Earn.	^h 10. ^m 35. ^s 25	^h 10. ^m 35. ^s 12	^h 10. ^m 36. ^s 1	^h 16. ^m 38. ^s 26	^h 10. ^m 35. ^s 59	^m — ^s 1
	III	Ecl. reap...		F	N. Eq.	A ¹	^h 10. ^m 36. ^s 12	^h 10. ^m 35. ^s 20	^h 10. ^m 36. ^s 9	^h 16. ^m 38. ^s 34	^h 10. ^m 35. ^s 59	^m — ^s 9
Dec. 27	III	(q) Ecl. disap..		R	N. Eq.	A ¹	^h 12. ^m 20. ^s 30	^h 12. ^m 20. ^s 45	^h 12. ^m 21. ^s 46	^h 17. ^m 56. ^s 22	^h 12. ^m 20. ^s 7	^m — ^s 1

(m) The time noted is that by the Transit Clock, a click being used which was previously set with it.

(n) (o) Very good.

(p) Very good: true to half a second.

(q) Difficult to determine the exact time of disappearance.

OCCULTATIONS of STARS by the MOON.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock, or Chronometer.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
Jan. 23	θ^1 Tauri	Disap..	Dark	H B	N. Eq.	A ¹	^h 5. ^m 50. ^s 54	^h 5. ^m 52. ^s 28	^h 5. ^m 53. ^s 8	^h 9. ^m 41. ^s 41
	θ^1 Tauri	Disap..	Dark	R	Altazimuth	G ¹	^h 5. ^m 52. ^s 17	^h 5. ^m 52. ^s 28	^h 5. ^m 53. ^s 9	^h 9. ^m 41. ^s 41
	θ^1 Tauri	Disap..	Dark	D	E. Eq.	Earn.	^h 5. ^m 52. ^s 10	^h 5. ^m 52. ^s 28	^h 5. ^m 53. ^s 9	^h 9. ^m 41. ^s 41
	θ^2 Tauri	Disap..	Dark	H B	N. Eq.	A ¹	^h 5. ^m 58. ^s 7	^h 5. ^m 59. ^s 40	^h 6. ^m 0. ^s 21	^h 9. ^m 48. ^s 52
	θ^2 Tauri	Disap..	Dark	D	E. Eq.	Earn.	^h 5. ^m 59. ^s 23	^h 5. ^m 59. ^s 41	^h 6. ^m 0. ^s 21	^h 9. ^m 48. ^s 53
	θ^2 Tauri	Disap..	Dark	R	Altazimuth	G ¹	^h 5. ^m 59. ^s 30	^h 5. ^m 59. ^s 41	^h 6. ^m 0. ^s 21	^h 9. ^m 48. ^s 53
	θ^2 Tauri	Reap..	Bright	R	Altazimuth	G ¹	^h 6. ^m 54. ^s 7	^h 6. ^m 54. ^s 17	^h 6. ^m 54. ^s 58	^h 10. ^m 43. ^s 20
	B. A. C. 1391 ...	Disap..	Dark	D	E. Eq.	Earn.	^h 6. ^m 57. ^s 24	^h 6. ^m 57. ^s 42	^h 6. ^m 58. ^s 22	^h 10. ^m 46. ^s 45
	(a) B. A. C. 1391 ...	Disap..	Dark	H B	46 inch Ach.	P & F, 1826	^h 10. ^m 43. ^s 26	....	....	^h 10. ^m 46. ^s 45
	θ^1 Tauri	Reap..	Bright	D	E. Eq.	Earn.	^h 6. ^m 59. ^s 57	^h 7. ^m 0. ^s 14	^h 7. ^m 0. ^s 55	^h 10. ^m 49. ^s 17
	θ^1 Tauri	Reap..	Bright	R	Altazimuth	G ¹	^h 7. ^m 0. ^s 8	^h 7. ^m 0. ^s 18	^h 7. ^m 0. ^s 59	^h 10. ^m 49. ^s 20

(a) It was found by comparison at coincidence of beats that $11^h. 1^m. 11^s$ of the chronometer corresponded to $7^h. 15^m. 30^s$ of the Transit Clock: from which it appears that the chronometer was $3^m. 18^s. 67$ slow of Greenwich Mean Solar Time.

OCCULTATIONS OF STARS by the MOON—concluded.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
							h m s.	h m s.	h m s.	h m s.
Jan. 23	(b) Aldebaran.....	Disap. .	Dark	H B	N. Eq.	A ¹	9. 42. 29.2	9. 44. 2.9	9. 44. 43.48	13. 32. 38.36
	Aldebaran.....	Disap. .	Dark	D	E. Eq.	Earn.	9. 43. 45.3	9. 44. 3.1	9. 44. 43.68	13. 32. 38.56
	Aldebaran.....	Disap. .	Dark	R	Altazimuth	G ¹	9. 43. 52.6	9. 44. 3.6	9. 44. 44.18	13. 32. 39.06
	(c) Aldebaran.....	Reap. .	Bright	D	E. Eq.	Earn.	10. 12. 35.8	10. 12. 53.6	10. 13. 34.20	14. 1. 24.36
	(d) Aldebaran.....	Reap. .	Bright	H B	N. Eq.	A ¹	10. 11. 20.0	10. 12. 53.7	10. 13. 34.30	14. 1. 24.46
	(e) Aldebaran.....	Reap. .	Bright	R	Altazimuth	G ¹	10. 12. 43.0	10. 12. 54.0	10. 13. 34.60	14. 1. 24.75
Mar. 23	♂ ¹ Cancri.....	Disap. .	Dark	H	E. Eq.	Earn.	11. 33. 36.5	11. 33. 42.0	11. 34. 15.72	11. 29. 54.12
	(f) ♂ ¹ Cancri.....	Disap. .	Dark	H B	Altazimuth	G ¹	11. 33. 15.0	11. 33. 43.4	11. 34. 17.12	11. 29. 55.52
May 19	(g) Jupiter.....	Emersion First appearance	Bright	M	E. Eq.	Earn.	11. 23. 58.0	11. 24. 0.2	11. 24. 44.40	7. 36. 17.64
	(h) Jupiter.....	Total emer.	Bright	M	E. Eq.	Earn.	11. 25. 24.5	11. 25. 26.7	11. 26. 10.90	7. 37. 43.90
	Jupiter.....	Emersion First appearance	Bright	H	30 inch Ach.	..	7. 36. 15.0	....	....	7. 36. 19.50
	(i) Jupiter.....	Total emer.	Bright	H	30 inch Ach.	..	7. 37. 38.5	....	....	7. 37. 43.00
	(k) Jupiter.....	Total emer.	Bright	R	Altazimuth	G ¹	11. 25. 9.0	11. 25. 29.0	11. 26. 13.20	7. 37. 46.19
June 1	42 Aquarii.....	Reap. .	Dark	R	E. Eq.	Earn.	19. 15. 38.0	19. 15. 43.6	19. 16. 48.19	14. 35. 57.26
Aug. 14	(l) γ Libræ.....	Disap. .	Dark	H B	E. Eq.	Earn.	18. 0. 11.7	17. 59. 54.1	18. 0. 22.72	8. 28. 46.94
	(m) γ Libræ.....	Disap. .	Dark	D	Altazimuth	G ¹	17. 59. 29.5	17. 59. 54.4	18. 0. 23.02	8. 28. 47.24
Oct. 21	B. A. C. 845....	Reap. .	Dark	R	E. Eq.	Earn.	5. 19. 23.0	5. 20. 4.5	5. 20. 37.17	15. 19. 48.23
Dec. 17	(n) 75 Tauri.....	Disap. .	Dark	E	N. Eq.	A ¹	22. 16. 40.0	22. 16. 43.0	22. 17. 28.19	4. 33. 41.78

(b) Instantaneous.

(c) The star when first noticed appeared projected on the Moon's limb: the observation is very good, and true to a small fraction of a second.

(d) (e) The star appeared to hang on the Moon's limb for some seconds.

(f) Pretty good.

(g) First appearance of first limb of the planet: instantaneously seen; the observation good.

(h) Last contact of second limb; the observation pretty good, though the planet was rather clouded. The only phenomenon worthy of remark, while the planet was passing behind the Moon, was the shaded appearance of the part of the planet contiguous to the Moon's limb, which was as if a shadow was thrown upon the planet. The observer attributes this to the effect on the eye produced by the superior brightness of the Moon.

(i) This observation was made at Mr. Henry's residence, in Hyde Vale, with a Mean Solar Clock, which was 4^s 5 slow of Greenwich Mean Solar Time, and with a 30 inch Telescope by Ramsden (power about 40). The first appearance was certain to two or three seconds: clouds were passing across the Moon's disk: the daylight strong.

(k) Last contact of limb: the planet faint.

(l) Good: the star faint through clouds.

(m) Very good: the Moon was shining through a thin cloud, which made the star faint, but the observation was not affected by it.

(n) The star very faint, but the observation is considered good.

Disappearance of θ^1 Tauri, 1850, January 23, $9^h.41^m.41^s.93 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$88.17.16.65$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$64.58.54.75$	$+ x$	$+ 0.6145$	$\times t$
Moon's N. P. D.	$73.45.15.83$	$+ y$	$- 0.1123$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$59.45.49$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.17.08$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$65.0.14.70$	$+ e''$		
Star's N. P. D.....	$74.22.39.40$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$65.15.35.84$	$+ e$	$+ 0.1505 \times t$	$+ 0.9211 \times m$
Geocentric N. P. D. of corresponding point.....	$73.47.4.50$	$+ f$	$- 0.0166 \times t$	$- 2.1349 \times m$

Geocentric distance of center from corresponding point,

$$16.7.32 + 0.9541 \times \left\{ + e - x - 0.4640 \times t + 0.9211 \times m \right\} \\ + 0.1130 \times \left\{ f - 0.0166 \times t - 2.1349 \times m \right\} \\ - 0.1116 \times \left\{ y - 0.1123 \times t \right\}$$

Final Equation.

$$+ 9''.76 = + 0.9541 \times e + 0.1130 \times f - 0.9541 \times x - 0.1116 \times y - 0.4321 \times t + 0.6376 \times m - 0.9771 \times n$$

Disappearance of θ^2 Tauri, 1850, January 23, $9^h.48^m.53^s.46 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$90.5.17.30$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$65.3.19.80$	$+ x$	$+ 0.6145$	$\times t$
Moon's N. P. D.	$73.44.27.22$	$+ y$	$- 0.1123$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$59.45.74$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.17.14$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$65.1.39.00$	$+ e''$		
Star's N. P. D.....	$74.28.8.10$	$+ f$		
Geocentric R. A. of corresponding point in arc....	$65.18.5.80$	$+ e$	$+ 0.1483 \times t$	$+ 0.9868 \times m$
Geocentric N. P. D. of corresponding point.....	$73.52.21.13$	$+ f$	$- 0.0179 \times t$	$- 2.1470 \times m$

Geocentric distance of center from corresponding point,

$$16.13.93 + 0.8391 \times \left\{ + e - x - 0.4662 \times t + 0.9868 \times m \right\} \\ + 0.4871 \times \left\{ f - 0.0179 \times t - 2.1470 \times m \right\} \\ - 0.4861 \times \left\{ y - 0.1123 \times t \right\}$$

Final Equation.

$$+ 3''.21 = + 0.8391 \times e + 0.4871 \times f - 0.8391 \times x - 0.4861 \times y - 0.3453 \times t - 0.2178 \times m - 0.9771 \times n$$

Reappearance of θ^2 Tauri, 1850, January 23, $10^h.43^m.20^s.95 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$103.44.33.90$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$65.36.48.60 + x$	$''$	$+ 0.6159$	$\times t$
Moon's N. P. D.	$73.38.21.83 + y$	$''$	$- 0.1106$	$\times t$
Moon's Horizontal Equatoreal Parallax	$59.47.51 \times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter.....	$16.17.63 \times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc.....	$65.1.39.00 + e''$			
Star's N. P. D.	$74.28.8.10 + f$			
Geocentric R. A. of corresponding point in arc....	$65.25.56.86 + e$	$''$	$+ 0.1282 \times t + 1.4579 \times m$	
Geocentric N. P. D. of corresponding point	$73.51.5.45 + f$	$''$	$- 0.0261 \times t - 2.2227 \times m$	

Geocentric distance of center from corresponding point,

$$16.27.22 + 0.6085 \times \left\{ -e + x + 0.4877 \times t - 1.4579 \times m \right\} \\ + 0.7739 \times \left\{ f - 0.0261 \times t - 2.2227 \times m \right\} \\ - 0.7733 \times \left\{ y - 0.1106 \times t \right\}$$

Final Equation.

$$- 9''.59 = - 0.6085 \times e + 0.7739 \times f + 0.6085 \times x - 0.7733 \times y + 0.3621 \times t - 2.6073 \times m - 0.9776 \times n$$

Disappearance of B. A. C. 1391, 1850, January 23, $10^h.46^m.45^s.27 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$104.35.46.95$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$65.38.54.60 + x$	$''$	$+ 0.6159$	$\times t$
Moon's N. P. D.	$73.37.59.15 + y$	$''$	$- 0.1106$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$59.47.63 \times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	$16.17.66 \times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	$65.29.48.30 + e''$			
Star's N. P. D.	$74.8.21.60 + f$			
Geocentric R. A. of corresponding point in arc....	$65.54.20.76 + e$	$''$	$+ 0.1264 \times t + 1.4725 \times m$	
Geocentric N. P. D. of corresponding point	$73.31.30.50 + f$	$''$	$- 0.0267 \times t - 2.2111 \times m$	

Geocentric distance of center from corresponding point,

$$16.9.67 + 0.8788 \times \left\{ +e - x - 0.4895 \times t + 1.4725 \times m \right\} \\ - 0.4003 \times \left\{ f - 0.0267 \times t - 2.2111 \times m \right\} \\ + 0.4015 \times \left\{ y - 0.1106 \times t \right\}$$

Final Equation.

$$+ 7''.99 = + 0.8788 \times e - 0.4003 \times f - 0.8788 \times x + 0.4015 \times y - 0.4639 \times t + 2.1792 \times m - 0.9777 \times n$$

Reappearance of θ^1 Tauri, 1850, January 23, $10^h.49^m.17^s.08 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$105.13.50.40$	$''$	$+$	15.0	$\times t$
Moon's Right Ascension in arc.....	$65.40.27.90$	$+$	x	$+$	$0.6159 \times t$
Moon's N. P. D.	$73.37.42.31$	$+$	y	$-$	$0.1106 \times t$
Moon's Horizontal Equatoreal Parallax.....	$59.47.73$	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.17.68$	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$65.0.14.70$	$+$	e''		
Star's N. P. D.	$74.22.39.40$	$+$	f	$''$	$''$
Geocentric R. A. of corresponding point in arc....	$65.25.20.84$	$+$	e	$+$	$0.1247 \times t + 1.5061 \times m$
Geocentric N. P. D. of corresponding point.....	$73.45.30.49$	$+$	f	$-$	$0.0277 \times t - 2.2289 \times m$

Geocentric distance of center from corresponding point,

$$16.28.47 + 0.8451 \times \left\{ -e + x + 0.4912 \times t - 1.5061 \times m \right\} \\ + 0.4741 \times \left\{ f - 0.0277 \times t - 2.2289 \times m \right\} \\ - 0.4731 \times \left\{ y - 0.1106 \times t \right\}$$

Final Equation.

$$-10''.79 = -0.8451 \times e + 0.4741 \times f + 0.8451 \times x - 0.4731 \times y + 0.4543 \times t - 2.3295 \times m - 0.9777 \times n$$

Disappearance of Aldebaran, 1850, January 23, $13^h.32^m.39^s.06 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$146.10.2.70$	$''$	$+$	15.0	$\times t$
Moon's Right Ascension in arc.....	$67.21.20.85$	$+$	x	$+$	$0.6201 \times t$
Moon's N. P. D.	$73.19.57.60$	$+$	y	$-$	$0.1055 \times t$
Moon's Horizontal Equatoreal Parallax.....	$59.52.97$	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.19.11$	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$66.49.53.10$	$+$	e''		
Star's N. P. D.....	$73.47.56.60$	$+$	f	$''$	$''$
Geocentric R. A. of corresponding point in arc....	$67.28.16.24$	$+$	e	$+$	$0.0294 \times t + 2.3031 \times m$
Geocentric N. P. D. of corresponding point.....	$73.5.9.04$	$+$	f	$-$	$0.0434 \times t - 2.5676 \times m$

Geocentric distance of center from corresponding point,

$$16.13.49 + 0.3912 \times \left\{ +e - x - 0.5907 \times t + 2.3031 \times m \right\} \\ - 0.9128 \times \left\{ f - 0.0434 \times t - 2.5676 \times m \right\} \\ + 0.9130 \times \left\{ y - 0.1055 \times t \right\}$$

Final Equation.

$$+5''.62 = +0.3912 \times e - 0.9128 \times f - 0.3912 \times x + 0.9130 \times y - 0.2878 \times t + 3.2447 \times m - 0.9791 \times n$$

Reappearance of Aldebaran, 1850, January 23, 14^h. 1^m. 24^s. 36 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	153. 23. 33. 00	"	+	15. 0	$\times t$
Moon's Right Ascension in arc.....	67. 39. 10. 05	+	x	+	0. 6201 $\times t$
Moon's N. P. D.	73. 16. 54. 89	+	y	-	0. 1055 $\times t$
Moon's Horizontal Equatoreal Parallax.....	59. 53. 88	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16. 19. 35	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	66. 49. 53. 10	+	e''		
Star's N. P. D.	73. 47. 56. 60	+	f		
Geocentric R. A. of corresponding point in arc....	67. 28. 53. 42	+	e	+	0. 0098 $\times t$ + 2. 3403 $\times m$
Geocentric N. P. D. of corresponding point	73. 3. 50. 17	+	f	-	0. 0448 $\times t$ - 2. 6464 $\times m$

Geocentric distance of center from corresponding point,

$$16. 21. 91 + 0. 5752 \times \left\{ -e + x + 0. 6103 \times t - 2. 3403 \times m \right\} \\ - 0. 7988 \times \left\{ f - 0. 0448 \times t - 2. 6464 \times m \right\} \\ + 0. 7994 \times \left\{ y - 0. 1055 \times t \right\}$$

Final Equation.

$$- 2''. 56 = - 0. 5752 \times e - 0. 7988 \times f + 0. 5752 \times x + 0. 7994 \times y + 0. 3025 \times t + 0. 7679 \times m - 0. 9794 \times n$$

Disappearance of ϵ^1 Cancri, 1850, March 23, 11^h. 29^m. 55^s. 52 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	173. 34. 17. 40	"	+	15. 0	$\times t$
Moon's Right Ascension in arc	132. 22. 37. 20	+	x	+	0. 6144 $\times t$
Moon's N. P. D.	73. 26. 4. 30	+	y	+	0. 1083 $\times t$
Moon's Horizontal Equatoreal Parallax.....	59. 40. 17	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	16. 15. 59	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	132. 13. 21. 00	+	e''		
Star's N. P. D.	74. 6. 26. 60	+	f		
Geocentric R. A. of corresponding point in arc	132. 39. 0. 52	+	e	+	0. 1232 $\times t$ + 1. 5395 $\times m$
Geocentric N. P. D. of corresponding point	73. 29. 26. 05	+	f	-	0. 0295 $\times t$ - 2. 2205 $\times m$

Geocentric distance of center from corresponding point,

$$16. 3. 99 + 0. 9374 \times \left\{ +e - x - 0. 4912 \times t + 1. 5395 \times m \right\} \\ + 0. 2100 \times \left\{ f - 0. 0295 \times t - 2. 2205 \times m \right\} \\ - 0. 2086 \times \left\{ y + 0. 1083 \times t \right\}$$

Final Equation.

$$+ 11''. 60 = + 0. 9374 \times e + 0. 2100 \times f - 0. 9374 \times x - 0. 2086 \times y - 0. 4893 \times t + 0. 9768 \times m - 0. 9756 \times n$$

Reappearance of Jupiter's center, 1850, May 19, 7^h. 37^m. 0^s.77 + t^s , Greenwich Mean Solar Time.*

Right Ascension of Zenith in arc.....	171. 21. 54.75	"	+ 15.0	× t
Moon's Right Ascension in arc	165. 25. 11.55	+ x	+ 0.5501	× t
Moon's N. P. D.	81. 27. 32.52	+ y	+ 0.1781	× t
Moon's Horizontal Equatoreal Parallax.....	58. 22. 00	× $\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	15. 54. 37	× $\left(1 + \frac{n}{1000}\right)$		
Tabular R. A. of Center of Planet	165. 25. 11.55	+ e''	+ 0.0011	× t
Parallax of Planet in R. A.	0.00			
Tabular N. P. D. of Center of Planet	82. 9. 39.40	+ f	+ 0.0006	× t
Parallax of Planet in N. P. D.	+ 1.16			
Geocentric R. A. of corresponding point.....	165. 8. 48.44	+ e + $\left\{ \begin{smallmatrix} +0.0011 \\ +0.1558 \end{smallmatrix} \right\}$	× t + 0.2419	× m
Geocentric N. P. D. of corresponding point.....	81. 29. 34.08	+ f + $\left\{ \begin{smallmatrix} +0.0006 \\ -0.0024 \end{smallmatrix} \right\}$	× t - 2.4053	× m
Geocentric distance of center from corresponding point,				

$$16. 19. 82 + 0.9815 \times \left\{ -e + x + 0.3932 \times t - 0.2419 \times m \right\} \\ + 0.1244 \times \left\{ f - 0.0018 \times t - 2.4053 \times m \right\} \\ - 0.1236 \times \left\{ y + 0.1781 \times t \right\}$$

Final Equation.

$$-24.55 = -0.9815 \times e + 0.1244 \times f + 0.9815 \times x - 0.1236 \times y + 0.3637 \times t - 0.5366 \times m - 0.9544 \times n$$

Reappearance of 42 Aquarii, 1850, June 1, 14^h. 35^m. 57^s.26 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	289. 12. 2.85	"	+ 15.0	× t
Moon's Right Ascension in arc	332. 1. 52.95	+ x	+ 0.4931	× t
Moon's N. P. D.	102. 41. 40.04	+ y	- 0.1348	× t
Moon's Horizontal Equatoreal Parallax	54. 32. 50	× $\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	14. 51. 76	× $\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	332. 11. 36.15	+ e''		
Star's N. P. D.	103. 34. 26.60	+ f		
Geocentric R. A. of corresponding point in arc....	331. 47. 48.07	+ e + 0.1078	× t - 1.4281	× m
Geocentric N. P. D. of corresponding point.....	102. 47. 17.88	+ f - 0.0225	× t - 2.8289	× m
Geocentric distance of center from corresponding point,				

$$14. 50. 63 + 0.9026 \times \left\{ -e + x + 0.3853 \times t + 1.4281 \times m \right\} \\ + 0.3789 \times \left\{ f - 0.0225 \times t - 2.8289 \times m \right\} \\ - 0.3797 \times \left\{ y - 0.1348 \times t \right\}$$

Final Equation.

$$+1.13 = -0.9026 \times e + 0.3789 \times f + 0.9026 \times x - 0.3797 \times y + 0.3905 \times t + 0.2171 \times m - 0.8908 \times n$$

* In the computation it is assumed that the mean of the times of contact of the limbs of the planet corresponds with the contact of the center with the Moon's limb.

Disappearance of γ Libræ, 1850, August 14, 8^h. 28^m. 47^s. 24 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	270. 5. 45. 00	"	+ 15. 0	$\times t$
Moon's Right Ascension in arc	231. 54. 17. 70	+ x	+ 0. 5234	$\times t$
Moon's N. P. D.	103. 26. 47. 86	+ y	+ 0. 1374	$\times t$
Moon's Horizontal Equatoreal Parallax	56. 4. 56	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	15. 16. 82	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	231. 47. 28. 50	+ e''		
Star's N. P. D.	104. 17. 6. 00	+ f		
Geocentric R. A. of corresponding point in arc ...	232. 9. 46. 80	+ e	+ 0. 1199 $\times t$	+ 1. 3383 $\times m$
Geocentric N. P. D. of corresponding point	103. 27. 59. 30	+ f	+ 0. 0230 $\times t$	- 2. 9467 $\times m$

Geocentric distance of center from corresponding point,

$$15. 6. 41 + 0. 9698 \times \left\{ + e - x - 0. 4035 \times t + 1. 3383 \times m \right\} \\ + 0. 0783 \times \left\{ f + 0. 0230 \times t - 2. 9467 \times m \right\} \\ - 0. 0793 \times \left\{ y + 0. 1374 \times t \right\}$$

Final Equation.

$$+ 10''. 41 = + 0. 9698 \times e + 0. 0783 \times f - 0. 9698 \times x - 0. 0793 \times y - 0. 4004 \times t + 1. 0672 \times m - 0. 9168 \times n$$

Reappearance of B. A. C. 845, 1850, October 21, 15^h. 19^m. 48^s. 28 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	80. 9. 17. 55	"	+ 15. 0	$\times t$
Moon's Right Ascension in arc	39. 51. 1. 35	+ x	+ 0. 5355	$\times t$
Moon's N. P. D.	79. 43. 49. 03	+ y	- 0. 1696	$\times t$
Moon's Horizontal Equatoreal Parallax	57. 11. 75	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	15. 35. 11	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	39. 13. 20. 10	+ e''		
Star's N. P. D.	80. 31. 8. 70	+ f		
Geocentric R. A. of corresponding point in arc ...	39. 37. 5. 56	+ e	+ 0. 1164 $\times t$	+ 1. 4255 $\times m$
Geocentric N. P. D. of corresponding point	79. 51. 40. 06	+ f	- 0. 0161 $\times t$	- 2. 3686 $\times m$

Geocentric distance of center from corresponding point,

$$15. 28. 44 + 0. 8541 \times \left\{ - e + x + 0. 4191 \times t - 1. 4255 \times m \right\} \\ + 0. 4971 \times \left\{ f - 0. 0161 \times t - 2. 3686 \times m \right\} \\ - 0. 4965 \times \left\{ y - 0. 1696 \times t \right\}$$

Final Equation.

$$+ 6''. 67 = - 0. 8541 \times e + 0. 4971 \times f + 0. 8541 \times x - 0. 4965 \times y + 0. 4341 \times t - 2. 3947 \times m - 0. 9351 \times n$$

Disappearance of 75 Tauri, 1850, December 17, $4^h.33^m.41^s.78 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$334.22.2.85'' + 15.0'' \times t$
Moon's Right Ascension in arc	$64.4.8.25 + x + 0.5993 \times t$
Moon's N. P. D.	$73.16.40.73 + y - 0.1270 \times t$
Moon's Horizontal Equatoreal Parallax.....	$58.57.09 \times \left(1 + \frac{m}{1000}\right)$
Moon's Semidiameter.....	$16.3.84 \times \left(1 + \frac{n}{1000}\right)$
Star's Right Ascension in arc.	$64.58.57.60 + e''$
Star's N. P. D.....	$73.58.47.00 + f$
Geocentric R. A. of corresponding point in arc....	$64.20.32.36 + e - 0.0018 \times t - 2.3052 \times m$
Geocentric N. P. D. of corresponding point.....	$73.14.36.34 + f + 0.0425 \times t - 2.6507 \times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &15.50.58'' + 0.9493 \times \left\{ + e - x - 0.6010 \times t - 2.3052 \times m \right\} \\
 &\quad - 0.1302 \times \left\{ f + 0.0425 \times t - 2.6507 \times m \right\} \\
 &\quad + 0.1316 \times \left\{ y - 0.1270 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+13''.26 = +0.9493 \times e - 0.1302 \times f - 0.9493 \times x + 0.1316 \times y - 0.5927 \times t - 1.8432 \times m - 0.9638 \times n$$

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF DISTANCE AND ANGLES OF POSITION

OF THE

COMPONENTS OF γ VIRGINIS,

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE TELESCOPE OF THE EAST EQUATOREAL.

1850.

RESULTS of MEASURES of DISTANCE and ANGLE of POSITION, for each Day's Observations of the COMPONENTS of γ VIRGINIS, observed at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the East Equatoreal.

$$\gamma \text{ VIRGINIS. } \begin{cases} \text{R. A.} = 12^{\text{h}}.34^{\text{m}}. \\ \text{N. P. D.} = 90^{\circ}.37'. \end{cases}$$

Day and Mean Solar Hour.	Observed Distance.	Method of Observation.	Number of Measures.	Observed Angle of Position.	Number of Measures.	Observer.	Remarks.
June 18. $9^{\text{h}}. \frac{1}{2}$	" 3.02	Equal distances	10	$179^{\circ}. 59'$	1	M	
June 22. 9	2.82	Equal distances	10	182. 54	1	M	
June 25. 9	2.98	Equal distances	10	178. 5	1	M	
July 4. 9	2.96	Equal distances	10	177. 48	1	M	



ROYAL OBSERVATORY, GREENWICH.

C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

FOR 1851, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1851,

WITH THE ANNUAL VARIATIONS:

(THE NORTH POLAR DISTANCES BEING CORRECTED FOR DISCORDANCE OF DIRECT AND REFLEXION-OBSERVATIONS, AND FOR
FLEXURE OF TELESCOPE OF THE TRANSIT-CIRCLE:)

ALSO,

NEW CONSTANTS FOR STARS INCLUDED IN THE CATALOGUE,

NOT OBSERVED IN PRECEDING YEARS.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, FOR 1851, JAN. 1, OF STARS OBSERVED IN THE YEAR 1851 (THE N. P. D.'s BEING CORRECTED FOR DISCORDANCE OF DIRECT AND REFLEXION OBSERVATIONS, AND FOR FLEXURE OF TELESCOPE OF THE TRANSIT-CIRCLE): WITH THE ANNUAL VARIATIONS.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
1	α Andromedæ.....	25	0.76	0. 0. 41.70	+3.084	24	1	61. 43. 56.07	58.35	25	0.80	56.16	-19.91
2	γ Pegasi.....	23	0.71	0. 5. 34.06	3.082	20		75. 38. 42.52		20	0.74	42.52	20.04
3	ι Ceti.....	4	0.89	0. 11. 50.13	3.060	4		99. 39. 0.50		4	0.89	0.50	19.98
4	10 Ceti.....	1	0.62	0. 18. 58.96	3.077	1		90. 52. 29.67		1	0.62	29.67	19.99
5	12 Ceti.....	6	0.70	0. 22. 26.11	3.063	6		94. 46. 52.03		6	0.70	52.03	19.95
6	13 Ceti.....	2	0.73	0. 27. 34.75	3.085	2		94. 24. 49.08		2	0.73	49.08	19.88
7	ζ Cassiopeiæ.....	1	0.89	0. 28. 41.74	3.299	1		36. 55. 26.46		1	0.89	26.46	19.91
8	ϵ Andromedæ.....	5	0.82	0. 30. 41.45	3.154	7	3	61. 29. 53.22	53.52	10	0.85	53.31	19.67
9	δ Andromedæ.....	3	0.80	0. 31. 22.24	3.187	5	2	59. 57. 18.32	19.01	7	0.84	18.52	19.76
10	α Cassiopeiæ.....	3	0.15	0. 32. 4.73	3.351	1		34. 16. 51.00		1	0.31	51.00	19.82
11	β Ceti.....	16	0.77	0. 36. 6.50	3.013	17		108. 48. 18.96		17	0.79	18.96	19.83
12	B. A. C. 205.....	1	0.77	0. 37. 48.99	3.056	1		95. 26. 46.75		1	0.77	46.75	19.71
13	ζ Andromedæ.....	2	0.88	0. 39. 26.90	3.169	2		66. 32. 39.36		2	0.88	39.36	19.69
14	B. A. C. 240.....	1	0.36	0. 44. 44.89	11.539	1	1	1. 46. 42.12	43.22	3	0.72	42.31	19.66
15	B. A. C. 240. S. P. .	1				1		41.60					
15	20 Ceti.....	3	0.79	0. 45. 23.58	3.064	3		91. 57. 15.57		3	0.79	15.57	19.67
16	μ Andromedæ.....	4	0.78	0. 48. 29.91	3.301	4		52. 18. 36.13		4	0.78	36.13	19.68
17	2 Ursæ Minoris....	3	0.74	0. 49. 17.04	6.728	2		4. 32. 42.17		2	0.92	42.17	19.59
18	ϵ Piscium.....	2	0.84	0. 55. 12.89	3.114	2		82. 54. 48.13		2	0.86	48.13	19.50
19	e Piscium.....	1	0.99	1. 0. 41.86	3.083	1		85. 8. 23.89		1	0.99	23.89	19.17
20	β Andromedæ.....	5	0.83	1. 1. 24.22	3.336	4		55. 10. 14.33		4	0.82	14.33	19.27
21	α^1 Ursæ Minoris S.P.	6	0.37	1. 4. 54.36	17.416	6		1. 29. 21.62		6	0.37	21.62	19.25
22	Polaris.....	99	0.46	1. 5. 19.02	17.710	57	3	1. 29. 5.62	6.32	137	0.54	5.81	19.26
23	ψ Cassiopeiæ.....			1. 15. (30)		74	3	5.97	5.04				
24	δ Cassiopeiæ.....	1	0.84	1. 16. 6.71	3.853	1	1	22. 38. 59.84	59.12	2	0.86	59.48	19.01
25	θ Ceti.....	19	0.70	1. 16. 34.56	3.000	17		30. 32. 28.38		1	0.84	28.38	18.92
26	μ Piscium.....	2	0.74	1. 22. 22.70	3.137	2		98. 57. 12.83		17	0.76	12.83	18.75
27	η Piscium.....	6	0.86	1. 23. 30.98	3.200	7		84. 37. 33.04		2	0.74	33.04	18.60
28	51 Andromedæ.....	2	0.80	1. 28. 52.30	3.639	2		75. 25. 26.36		7	0.86	26.36	18.76
29	π Piscium.....	1	0.98	1. 29. 12.61	3.171	2		42. 7. 44.19		2	0.80	44.19	18.45
30	ν Piscium.....	5	0.83	1. 33. 40.82	3.117	4		78. 37.					
31	54 Andromedæ.....	1	0.88	1. 34. 20.99	3.716	1		85. 16. 4.49		4	0.79	4.49	18.38
32	τ Ceti.....	2	0.92	1. 37. 8.60	2.788	3		40. 3. 50.76		1	0.89	50.76	18.35
33	σ Piscium.....	3	0.87	1. 37. 31.84	3.162	3		106. 43. 24.26		3	0.85	24.26	19.15
34	ζ Ceti.....	2	0.84	1. 44. 6.29	2.960	3		81. 35. 39.07		3	0.87	39.07	18.31
35	α Trianguli.....	2	0.41	1. 44. 35.99	3.399	4	2	101. 4. 23.26	58.13	3	0.84	23.26	17.90
36	W. B. I. 824.....	1	0.83	1. 45. 48.06	3.097	1		61. 8. 59.09		6	0.63	58.77	17.80
37	α Piscium.....	1	0.71	1. 54. 20.27	3.102	1		87. 27. 47.80		1	0.83	47.80	17.95
38	α Arietis.....	16	0.63	1. 58. 47.06	3.363	16		87. 57. 28.15		1	0.71	28.15	17.62
39	ξ^1 Ceti.....	1	0.98	2. 5. 6.58	3.169			67. 14. 40.09		16	0.67	40.09	17.28
40	67 Ceti.....	5	0.93	2. 9. 33.14	2.988	4		81. 51.					
41	69 Ceti.....	1	0.98	2. 14. 18.91	3.070			97. 6. 40.12		4	0.91	40.12	16.82
42	B. A. C. 741.....	3	0.92	2. 16. 33.14	3.191	3		90. 17.					
43	ξ^2 Ceti.....	7	0.88	2. 20. 14.53	+3.182	6		80. 57. 46.31		3	0.92	46.31	16.51
								82. 12. 38.17		6	0.87	38.17	-16.42

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
44	δ Ceti.....	2	0·93	^h 2. 31. 51 ^m ·02	+3 ^s ·074	1		90. 19. 0 ^s ·72	"	1	0·94	0 ^s ·72	-15 ^s ·78
45	γ Ceti.....	17	0·69	2. 35. 35 ^s ·04	3 ^s ·100	15		87. 23. 41 ^s ·11		15	0·72	41 ^s ·11	15 ^s ·44
40	η ² Persei.....	1	0·07	2. 39. 51 ^s ·91	4 ^s ·312	1		34. 43. 36 ^s ·08		1	0·07	36 ^s ·08	15 ^s ·38
47	41 Arietis.....	1	0·90	2. 41. 13 ^s ·39	3 ^s ·510	2	1	63. 21. 25 ^s ·51	24 ^s ·76	3	0·91	25 ^s ·26	15 ^s ·20
48	η Eridani.....	2	0·96	2. 49. 9 ^s ·00	2 ^s ·928	2		99. 29. 37 ^s ·32		2	0·96	37 ^s ·32	14 ^s ·62
49	α Ceti.....	11	0·42	2. 54. 29 ^s ·74	3 ^s ·127	9		86. 29. 52 ^s ·55		9	0·51	52 ^s ·55	14 ^s ·41
50	β Persei.....	1	0·07	2. 58. 29 ^s ·56	3 ^s ·871			49. 37.					
51	*	1	0·07	3. 2. 32 ^s ·90	3 ^s ·319	1		75. 26. 1 ^s ·06		1	0·07	1 ^s ·06	14 ^s ·02
52	δ Arietis.....			3. 3. (10)		1	1	70. 50. 26 ^s ·07	25 ^s ·99	2	0·94	26 ^s ·03	14 ^s ·00
53	ζ Eridani.....	4	0·49	3. 8. 35 ^s ·93	2 ^s ·910	5		99. 22. 34 ^s ·91		5	0·40	34 ^s ·91	13 ^s ·66
54	τ ⁴ Eridani.....	2	0·05	3. 12. 53 ^s ·34	2 ^s ·665	2		112. 18. 10 ^s ·90		2	0·05	10 ^s ·90	13 ^s ·41
55	α Persei.....	4	0·14	3. 13. 42 ^s ·49	4 ^s ·239	4		40. 40. 25 ^s ·56		4	0·14	25 ^s ·56	13 ^s ·26
56	Groombridge 660...			3. 15. (30)		1		40. 47. 8 ^s ·99		1	0·06	8 ^s ·99	13 ^s ·19
57	ο Tauri.....	4	0·64	3. 16. 48 ^s ·05	3 ^s ·222	4		81. 29. 56 ^s ·28		4	0·64	56 ^s ·28	13 ^s ·05
58	B. A. C. 1061.....	1	0·07	3. 18. 15 ^s ·13	18 ^s ·240	2	1	3. 50. 11 ^s ·32	12 ^s ·07	3	0·65	11 ^s ·57	13 ^s ·02
59	ξ Tauri.....	1	0·98	3. 19. 5 ^s ·85	3 ^s ·243	1		80. 47. 24 ^s ·79		1	0·98	24 ^s ·79	12 ^s ·92
60	ε Eridani.....	4	0·50	3. 25. 54 ^s ·79	2 ^s ·826	4		99. 57. 56 ^s ·07		4	0·50	56 ^s ·07	12 ^s ·43
61	τ ⁵ Eridani.....	1	0·02	3. 27. 12 ^s ·36	2 ^s ·643			112. 8.					
62	δ Persei.....	1	0·07	3. 32. 20 ^s ·05	4 ^s ·235	1		42. 41. 37 ^s ·54		1	0·07	37 ^s ·54	12 ^s ·02
63	ο Persei.....	1	0·07	3. 34. 59 ^s ·28	3 ^s ·733	1		58. 11. 16 ^s ·24		1	0·07	16 ^s ·24	11 ^s ·89
64	17 Tauri.....	1	0·81	3. 36. 2 ^s ·12	3 ^s ·548	2		66. 21. 35 ^s ·46		2	0·08	35 ^s ·46	11 ^s ·76
65	δ Eridani.....	1	0·93	3. 36. 6 ^s ·83	2 ^s ·871	1		100. 16. 14 ^s ·89		1	0·93	14 ^s ·89	12 ^s ·51
66	η Tauri.....	7	0·07	3. 38. 38 ^s ·14	3 ^s ·552	11	1	66. 21. 36 ^s ·14	34 ^s ·57	12	0·35	36 ^s ·01	11 ^s ·55
67	ξ Persei.....	1	0·02	3. 44. 46 ^s ·47	3 ^s ·755	2		58. 33. 46 ^s ·31		2	0·03	46 ^s ·31	11 ^s ·14
68	B. A. C. 1211.....			3. 45. (20)		1		9. 43. 23 ^s ·41		1	0·06	23 ^s ·41	11 ^s ·17
69	B. A. C. 1229.....	2	0·11	3. 49. 31 ^s ·32	2 ^s ·792	2		104. 2. 5 ^s ·25		2	0·11	5 ^s ·25	10 ^s ·84
70	γ Eridani.....	4	0·28	3. 51. 4 ^s ·70	2 ^s ·796	7		103. 56. 8 ^s ·15		7	0·43	8 ^s ·15	10 ^s ·59
71	λ Tauri.....	3	0·38	3. 52. 25 ^s ·82	3 ^s ·315	4		77. 56. 5 ^s ·07		4	0·30	5 ^s ·07	10 ^s ·61
72	37 Eridani.....	1	0·09	4. 3. 6 ^s ·48	2 ^s ·924	1		97. 19. 0 ^s ·94		1	0·09	0 ^s ·94	9 ^s ·77
73	ο ¹ Eridani.....	4	0·07	4. 4. 35 ^s ·71	2 ^s ·922	3		97. 13. 46 ^s ·99		3	0·08	46 ^s ·99	9 ^s ·74
74	ο ² Eridani.....	4	0·06	4. 8. 24 ^s ·83	2 ^s ·763	4		97. 53. 16 ^s ·53		4	0·06	16 ^s ·53	5 ^s ·94
75	γ Tauri.....	3	0·36	4. 11. 19 ^s ·05	3 ^s ·407	3	1	74. 44. 11 ^s ·82	13 ^s ·31	4	0·30	12 ^s ·19	9 ^s ·14
76	δ ¹ Tauri.....	1	0·93	4. 14. 20 ^s ·74	3 ^s ·450	1		72. 48. 41 ^s ·43		1	0·93	41 ^s ·47	8 ^s ·91
77	ε Tauri.....	7	0·09	4. 19. 55 ^s ·24	3 ^s ·494	8	1	71. 9. 17 ^s ·05	16 ^s ·23	9	0·09	16 ^s ·96	8 ^s ·47
78	81 Tauri.....	2	0·06	4. 22. 9 ^s ·12	3 ^s ·418	2		74. 38. 11 ^s ·12		2	0·06	11 ^s ·12	8 ^s ·28
79	Aldebaran.....	19	0·20	4. 27. 22 ^s ·51	3 ^s ·433	16		73. 47. 41 ^s ·47		16	0·21	41 ^s ·47	7 ^s ·72
80	53 Eridani.....	1	0·06	4. 31. 21 ^s ·39	2 ^s ·746	1		104. 35. 55 ^s ·10		1	0·06	55 ^s ·10	7 ^s ·41
81	τ Tauri.....	2	0·06	4. 33. 18 ^s ·33	3 ^s ·592	2		67. 20. 4 ^s ·00		2	0·06	4 ^s ·00	7 ^s ·41
82	54 Eridani.....	3	0·08	4. 33. 55 ^s ·45	2 ^s ·623	3		109. 57. 38 ^s ·54		3	0·08	38 ^s ·54	7 ^s ·25
83	9 Camelopardali (α).	1	0·06	4. 39. 15 ^s ·48	5 ^s ·906	3	2	23. 55. 6 ^s ·12	8 ^s ·44	5	0·07	7 ^s ·05	6 ^s ·94
84	π ¹ Orionis.....	4	0·07	4. 41. 45 ^s ·27	3 ^s ·258	3		83. 18. 11 ^s ·05		3	0·07	11 ^s ·05	6 ^s ·71
85	π ³ Orionis.....	4	0·10	4. 43. 16 ^s ·36	3 ^s ·194	4		84. 39. 13 ^s ·77		4	0·10	13 ^s ·77	6 ^s ·56
86	ο ¹ Orionis.....	2	0·86	4. 44. 6 ^s ·46	3 ^s ·388	2		76. 0. 9 ^s ·15		2	0·86	9 ^s ·15	6 ^s ·47
87	ι Aurigæ.....	6	0·07	4. 47. 17 ^s ·85	3 ^s ·895	7	1	57. 4. 30 ^s ·16	29 ^s ·94	8	0·09	30 ^s ·13	6 ^s ·25
88	ε Aurigæ.....	2	0·11	4. 51. 17 ^s ·08	4 ^s ·291	2		46. 24. 11 ^s ·18		2	0·11	11 ^s ·18	5 ^s ·93
89	ζ Aurigæ.....	3	0·05	4. 52. 4 ^s ·27	+4 ^s ·181	5	1	49. 8. 50 ^s ·72	51 ^s ·82	6	0·07	50 ^s ·90	- 5 ^s ·86

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
90	11 Orionis	1	0·93	^h 4. 56. ^m 3·61	+ 3·424	1		^s 74. 48. 29·93	"	1	0·93	29·93	— 5·49
91	B. A. C. 1562	2	0·13	4. 56. 40·26	3·701	1		63. 46. 47·65		1	0·15	47·65	5·52
92	ε Leporis	4	0·07	4. 59. 9·22	2·538	4		112. 34. 29·41		4	0·07	29·41	5·22
93	β Eridani	2	0·10	5. 0. 31·69	2·948	2		95. 16. 58·71		2	0·10	58·71	5·07
94	B. A. C. 1592	1	0·14	5. 1. 12·23	2·876	1		98. 51. 45·48		1	0·14	45·48	5·09
95	Capella	5	0·15	5. 5. 41·46	4·419	5	1	44. 9. 34·57	36·29	6	0·14	34·86	4·28
96	Rigel	18	0·24	5. 7. 22·76	2·880	15		98. 22. 40·16		15	0·25	40·16	4·55
97	*			5. 7. (30)		1		98. 22. 49·91		1	0·15	49·91	4·56
98	τ Orionis	2	0·12	5. 10. 22·28	2·916	2		97. 0. 33·70		2	0·12	33·70	4·28
99	B. A. C. 1662	1	0·61	5. 14. 44·97	18·371	1	1	4. 53. 50·86	51·08	3	0·23	50·89	3·93
	B. A. C. 1662 S. P. .					1		50·73					
100	β Tauri	13	0·25	5. 16. 52·59	3·789	17	4	61. 31. 25·60	25·01	21	0·15	25·49	3·55
101	δ Orionis	16	0·15	5. 24. 23·79	3·066	11		90. 24. 48·56		11	0·20	48·56	3·06
102	α Leporis	3	0·09	5. 26. 9·52	2·648	2		107. 55. 58·44		2	0·07	58·44	2·96
103	λ Orionis	1	0·10	5. 26. 56·05	3·302	1		80. 10. 13·08		1	0·10	13·08	2·85
104	θ Orionis	1	0·15	5. 28. 4·08	2·945	1		95. 31. 6·61		1	0·15	6·61	2·78
105	ι Orionis	1	0·14	5. 28. 8·81	2·936	1		96. 0. 41·73		1	0·14	41·73	2·77
106	ε Orionis	5	0·21	5. 28. 39·25	3·044	5		91. 18. 4·84		5	0·32	4·84	2·72
107	125 Tauri	3	0·10	5. 30. 30·33	3·718	3		64. 11. 30·06		3	0·10	30·06	2·57
108	σ Orionis	1	0·10	5. 31. 16·15	3·010	1		92. 41. 25·98		1	0·10	25·98	2·50
109	Lalande 10669	1	0·15	5. 32. 19·00	3·734	1		63. 28. 7·58		1	0·15	7·58	2·42
110	ζ Orionis	1	0·10	5. 33. 14·59	3·030	1		92. 1. 32·98		1	0·10	32·98	2·33
111	α Columbae	4	0·29	5. 34. 15·28	2·177	4		124. 9. 26·15		4	0·29	26·15	2·25
112	γ Leporis	2	0·11	5. 38. 15·20	2·500	3		112. 30. 1·25		3	0·12	1·25	1·55
113	κ Orionis	3	0·07	5. 40. 41·44	2·846	3		99. 43. 36·25		3	0·07	36·25	1·66
114	Lalande 11108	1	0·15	5. 44. 42·28	3·733	1		63. 36. 55·79		1	0·15	55·79	1·34
115	B. A. C. 1879			5. 46. (20)		1	1	3. 14. 31·11	30·59	2	0·10	30·85	1·13
116	α Orionis	19	0·25	5. 47. 6·40	3 247	21		82. 37. 31·43		21	0·26	31·43	1·13
117	*	1	0·15	5. 47. 59·15	4·085	1		52. 46. 33·49		1	0·15	33·49	1·05
118	θ Aurigae	1	0·10	5. 49. 33·81	4·092	1		52. 48. 13·44		1	0·01	13·44	0·81
119	Rümker 1680	1	0·09	5. 54. 35·93	3·733	2		63. 39. 1·17		2	0·12	1·17	0·47
120	B. A. C. 1937	2	0·12	5. 54. 59·45	3·721	2		64. 33. 21·82		2	0·12	21·82	— 0·32
121	5 Geminorum	4	0·10	6. 2. 24·02	3·682	3		65. 33. 8·57		3	0·11	8·57	+ 0·29
122	η Geminorum	5	0·12	6. 5. 52·98	3·624	6	1	67. 27. 18·66	17·64	7	0·13	18·52	0·52
123	*	1	0·15	6. 9. 58·42	3·724	1		63. 57. 39·86		1	0·15	39·86	0·87
124	μ Geminorum	15	0·18	6. 13. 56·80	3·636	14	1	67. 24. 54·34	54·40	15	0·18	54·34	1·35
125	β Canis Majoris	1	0·14	6. 16. 8·53	2·643	1		107. 53. 7·13		1	0·14	7·13	1·41
126	B. A. C. 2083	1	0·09	6. 19. 4·05	7·657	1		16. 12. 0·99		1	0·09	0·99	1·67
127	Lalande 12336	1	0·15	6. 19. 31·25	3·712	1		64. 17. 32·84		1	0·15	32·84	1·71
128	Lalande 12395			6. 21. (20)		1		64. 13. 24·15		1	0·07	24·15	1·86
129	Lalande 12554	1	0·15	6. 25. 51·65	3·692	1		64. 58. 8·55		1	0·15	8·55	2·27
130	Lalande 12557	1	0·15	6. 25. 54·00	3·684	1		65. 15. 20·14		1	0·15	20·14	2·27
131	B. A. C. 2154	1	0·14	6. 28. 19·28	3·692	1		65. 17. 26·94		1	0·14	26·94	2·57
132	Cephei 51 (Hev.)	15	0·55	6. 29. 3·82	30·700	4	1	2. 44. 40·07	41·64	16	0·44	41·10	2·64
	Cephei 51 (Hev.) S. P. .					11		41·43					
133	γ Geminorum	2	0·45	6. 29. 6·25	+ 3·469	2		73. 28. 41·75		2	0·45	41·75	+ 2·56

117. This star is identical with No. 513 in the Greenwich Twelve-Year Catalogue.

123. This star is included in Bessel's Zone 523.

128. Of the 9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—*continued*.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A.		Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
				1851, Jan. 1.			D.	R.	D.	R.				
134	ν^1 Canis Majoris	1	0.10	^h 6. 29. 51. 34	^s 2. 62. 8	1			⁰ 108. 32. 27. 73	["]	1	0.10	27. 73	+ 2. 55
135	ϵ Geminorum	2	0.13	6. 34. 45. 84	3. 70. 0	2			64. 43. 35. 63		2	0.13	35. 63	3. 05
136	*	1	0.19	6. 34. 49. 10	4. 61. 9	1			40. 28. 46. 62		1	0.19	46. 62	3. 05
137	Sirius	24	0.31	6. 38. 34. 97	2. 64. 5	27			106. 30. 53. 41		27	0.29	53. 41	4. 59
138	θ Geminorum	4	0.11	6. 42. 57. 81	3. 96. 3	4			55. 51. 52. 32		4	0.11	52. 32	3. 78
139	θ Canis Majoris	5	0.15	6. 47. 16. 02	2. 79. 1	5			101. 51. 21. 02		5	0.15	21. 02	4. 14
140	μ Canis Majoris	2	0.15	6. 49. 16. 96	2. 75. 4	2			103. 51. 15. 78		2	0.16	15. 78	4. 28
141	ι Canis Majoris	1	0.11	6. 49. 29. 51	2. 67. 6	1			106. 51. 53. 41		1	0.11	53. 41	4. 28
142	ϵ Canis Majoris	4	0.22	6. 52. 46. 33	2. 36. 0	4			118. 46. 20. 99		4	0.22	20. 99	4. 57
143	Lacaille 2570.	1	0.19	6. 54. 58. 50	2. 46. 5	1			115. 0. 29. 21		1	0.19	29. 21	4. 78
144	ζ Geminorum	3	0.40	6. 55. 16. 17	3. 56. 7	4			69. 12. 57. 67		4	0.34	57. 67	4. 80
145	γ Canis Majoris	6	0.14	6. 57. 1. 07	2. 71. 8	6			105. 25. 0. 87		6	0.18	0. 87	4. 96
146	δ Canis Majoris	3	0.18	7. 2. 20. 06	2. 44. 1	3			116. 9. 35. 80		3	0.17	35. 80	5. 36
147	δ Geminorum	14	0.37	7. 11. 13. 22	3. 59. 6	13	1		67. 44. 53. 11	56. 12	14	0.34	53. 33	6. 15
148	ι Geminorum	1	0.19	7. 16. 28. 18	3. 74. 2	2	1		61. 54. 38. 78	38. 33	3	0.19	38. 63	6. 65
149	η Canis Majoris	2	0.17	7. 18. 12. 11	2. 37. 2	2			119. 0. 56. 67		2	0.17	56. 67	6. 72
150	β Canis Minoris	3	0.16	7. 19. 4. 04	3. 26. 1	2			81. 24. 52. 99		2	0.16	52. 99	6. 83
151	α^1 Geminorum			7. 25. (0)		1			57. 47. 27. 27		1	0.19	27. 27	7. 27
152	Castor	15	0.27	7. 25. 5. 12	3. 84. 1	14			57. 47. 23. 44		14	0.25	23. 44	7. 35
153	68 Geminorum	1	0.77	7. 25. 6. 11	3. 43. 3	1			73. 51. 24. 97		1	0.79	24. 97	7. 23
154	Procyon	28	0.42	7. 31. 30. 09	3. 14. 6	24			84. 23. 48. 96		24	0.41	48. 96	8. 85
155	Pollux	22	0.37	7. 36. 11. 56	3. 68. 3	22	1		61. 37. 6. 46	5. 91	23	0.33	6. 44	8. 23
156	B. A. C. 2596	1	0.18	7. 42. 15. 58	7. 36. 3	1			15. 41. 36. 44		1	0.18	36. 44	8. 65
157	ξ Navis	4	0.16	7. 43. 1. 63	2. 52. 7	5			114. 29. 20. 56		5	0.16	20. 56	8. 70
158	6 Cancri	5	0.17	7. 54. 21. 74	3. 70. 2	6	1		61. 47. 32. 15	34. 71	7	0.17	32. 52	9. 66
159	B. A. C. 2699	1	0.21	7. 57. 15. 46	2. 35. 4	1			122. 2. 54. 81		1	0.21	54. 81	9. 91
160	15 Argus	9	0.27	8. 1. 11. 90	2. 55. 8	9			113. 52. 39. 68		9	0.27	39. 68	10. 04
161	ζ^1 Cancri	1	0.19	8. 3. 39. 57	3. 45. 5	1			71. 54. 25. 37		1	0.19	25. 37	10. 41
162	β Cancri	6	0.30	8. 8. 25. 92	3. 26. 3	4			80. 21. 32. 75		4	0.37	32. 75	10. 72
163	B. A. C. 2787			8. 11. (40)		1	1		4. 26. 7. 51	9. 00	2	0.69	8. 26	10. 90
164	δ^1 Cancri	6	0.18	8. 14. 49. 61	3. 45. 0	5			71. 11. 36. 07		5	0.18	36. 07	11. 13
165	*	1	0.90	8. 18. 32. 88	3. 28. 8	1			78. 51. 20. 97		1	0.90	20. 97	11. 41
166	θ Cancri	1	0.27	8. 23. 5. 71	3. 43. 5	1			71. 24. 20. 67		1	0.27	20. 67	11. 77
167	η Cancri	5	0.18	8. 24. 5. 11	3. 48. 6	7	2		69. 3. 23. 50	23. 29	9	0.20	23. 42	11. 82
168	δ Hydræ	6	0.19	8. 29. 46. 00	3. 18. 4	5			83. 46. 47. 85		5	0.19	47. 85	12. 17
169	γ Cancri	5	0.18	8. 34. 39. 42	3. 48. 8	4			67. 59. 58. 77		4	0.18	58. 77	12. 50
170	δ Cancri	1	0.12	8. 36. 12. 70	3. 42. 5	1			71. 18. 6. 57		1	0.12	6. 57	12. 87
171	ϵ Hydræ	17	0.34	8. 38. 52. 93	3. 18. 9	23			83. 2. 16. 59		23	0.39	16. 59	12. 85
172	ζ Hydræ	3	0.20	8. 47. 30. 81	3. 18. 4	3			83. 29. 25. 87		3	0.20	25. 87	13. 38
173	B. A. C. 3042					3	3		8. 35. 1. 12	0. 71				
173	B. A. C. 3042 S.P. . . .	1	0.78	8. 48. 33. 47	9. 63. 9	1			1. 17		7	0.26	0. 95	13. 46
174	ι Ursæ Majoris	4	0.53	8. 48. 59. 05	4. 14. 8	4			41. 22. 38. 05		4	0.53	38. 05	13. 77
175	α Cancri	4	0.57	8. 50. 20. 02	3. 29. 3	5			77. 34. 7. 91		5	0.61	7. 91	13. 60
176	{ 10 Ursæ Majoris } { B. A. C. 3059 . . . }	1	0.24	8. 50. 56. 97	3. 93. 1	1			47. 37. 51. 95		1	0.24	51. 95	+ 13. 89
177	σ^1 Ursæ Majoris	1	0.15	8. 55. 13. 88	+ 5. 39. 8				22. 32.					

136. This star is identical with No. 7190 of Oeltzen's Catalogue of Argelander's Zones.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
178	α Caneri	7	0.18	8. 59. 40.34	+3.262	7		78. 44. 7.06	"	7	0.18	7.06	+14.13
179	38 Lyncis	3	0.21	9. 9. 33.33	3.763	4	2	52. 34. 13.68	12.96	6	0.25	13.44	14.80
180	83 Caneri	5	0.33	9. 10. 39.55	3.361	4		71. 39. 57.68		4	0.36	57.68	14.98
181	B. A. C. 3199	3	0.41	9. 15. 25.07	9.250	1		8. 1. 20.95		1	0.24	20.95	15.14
182	α Hydræ	19	0.25	9. 20. 15.90	2.948	24		98. 0. 55.28		24	0.33	55.28	15.34
183	θ Ursæ Majoris	6	0.44	9. 22. 51.84	4.062	4		37. 38. 48.31		6	0.44	47.53	16.10
	θ Ursæ Majoris S. P. .					2		45.97					
184	λ Leonis	1	0.79	9. 23. 12.75	3.441	1		66. 22. 40.19		1	0.79	40.19	15.58
185	ξ Leonis	2	0.12	9. 23. 54.60	3.245	2		78. 2. 35.86		2	0.12	35.86	15.64
186	ρ Leonis	7	0.27	9. 33. 11.67	3.228	6		79. 25. 56.47		6	0.30	56.47	16.13
187	ϵ Leonis	22	0.26	9. 37. 23.14	3.425	25		65. 32. 32.60		25	0.28	32.60	16.34
188	ν Ursæ Majoris	2	0.25	9. 40. 21.15	4.345	2		30. 15. 49.14		2	0.25	49.14	16.63
189	μ Leonis	5	0.23	9. 44. 16.96	3.428	6		63. 17. 37.06		6	0.24	37.06	16.70
190	π Leonis	9	0.23	9. 52. 20.16	3.182	9		81. 14. 35.41		9	0.23	35.41	17.05
191	Regulus	19	0.31	10. 0. 25.94	3.203	20		77. 18. 23.85		20	0.37	23.85	17.37
192	B. A. C. 3495	3	0.55	10. 7. 9.05	10.190	3	2	4. 59. 47.12	48.62	7	0.39	47.57	17.74
	B. A. C. 3495 S. P. .					2		47.20					
193	λ Ursæ Majoris	1	0.31	10. 8. 5.49	3.659	1		46. 20. 37.62		1	0.31	37.62	17.77
194	γ Leonis	1	0.27	10. 11. 45.05	3.322	2	1	69. 24. 23.64	24.46	3	0.30	23.91	18.01
195	B. A. C. 3528	2	0.80	10. 12. 25.81	8.122	1	1	6. 41. 16.24	16.47	4	0.52	16.30	17.96
	B. A. C. 3528 S. P. .					2		16.25					
196	μ Ursæ Majoris	2	0.30	10. 13. 26.09	3.615	2		47. 45. 11.69		2	0.30	11.69	17.89
197	μ Hydræ	3	0.27	10. 18. 53.26	2.900	3		106. 4. 37.28		3	0.27	37.28	18.25
198	31 Leonis Minoris (β)	3	0.29	10. 19. 15.16	3.502	3		52. 31. 52.38		3	0.29	52.38	18.26
199	ρ Leonis	6	0.37	10. 24. 57.69	3.171	7		79. 55. 42.42		7	0.36	42.42	18.39
200	34 Sextantis	4	0.30	10. 34. 55.80	3.105	4		85. 38. 23.06		4	0.30	23.06	18.70
201	ι Leonis	5	0.28	10. 41. 25.30	3.163	6		78. 40. 3.51		6	0.27	3.51	18.88
202	ν Hydræ	2	0.33	10. 42. 16.52	2.954	2		105. 24. 53.68		2	0.33	53.68	18.74
203	α Crateris	2	0.31	10. 52. 31.08	2.919	2		107. 30. 21.91		2	0.31	21.91	19.05
204	β Ursæ Majoris	1	0.35	10. 52. 49.02	3.685	1		32. 49. 12.59		1	0.35	12.59	19.17
205	d Leonis	2	0.27	10. 52. 51.94	3.104	2		85. 35. 0.75		2	0.27	0.75	19.25
206	α Ursæ Majoris			10. 54. (30)		1		27. 26. 44.11		1	0.49	44.11	19.33
207	χ Leonis	5	0.30	10. 57. 19.78	3.103	5		81. 51. 34.72		5	0.30	34.72	19.39
208	ψ Ursæ Majoris	1	0.30	11. 1. 16.10	3.411	2	1	44. 41. 38.29	38.69	3	0.31	38.42	19.49
209	δ Leonis	6	0.32	11. 6. 10.66	3.207	13		68. 39. 38.82		13	0.28	38.82	19.64
210	ξ^1 Ursæ Majoris	1	0.31	11. 10. 13.34	3.223	1		57. 37. 59.32		1	0.31	59.32	20.15
211	ν Ursæ Majoris	1	0.31	11. 10. 25.55	3.268	1		56. 5. 36.48		1	0.31	36.48	19.55
212	δ Crateris	9	0.33	11. 11. 53.71	2.995	12		103. 58. 21.87		12	0.32	21.87	19.41
213	σ Leonis	3	0.20	11. 13. 27.04	3.099	2		83. 9. 17.49		2	0.20	17.49	19.66
214	γ Crateris	1	0.32	11. 17. 26.58	2.990	1		106. 51. 57.32		1	0.32	57.32	19.67
215	τ Leonis	4	0.26	11. 20. 16.39	3.091	6		86. 19. 24.73		6	0.27	24.73	19.78
216	λ Draconis	1	0.36	11. 22. 30.37	3.671	2	1	19. 50. 50.40	49.25	3	0.34	50.02	19.87
217	θ Crateris	2	0.36	11. 29. 7.53	3.043	3		98. 58. 42.06		3	0.34	42.06	19.86
218	ν Leonis	3	0.31	11. 29. 19.23	3.074	3		90. 0. 6.06		3	0.31	6.06	19.87
219	ξ Crateris	2	0.33	11. 37. 12.91	3.033	3		107. 31. 21.36		3	0.32	21.36	19.97
220	κ Ursæ Majoris	1	0.41	11. 38. 9.99	+3.209	1		41. 23. 40.79		1	0.41	40.79	+19.94

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
221	93 Leonis	1	0.36	^h 11. 40. 17.56	+3.107	2		68. 57. 12.02	"	2	0.33	12.02	+19.98
222	Lalande 22308.....	1	0.30	^m 11. 41. 17.60	3.101			74. 40.					
223	β Leonis.....	14	0.31	11. 41. 27.38	3.066	21		74. 35. 43.04		21	0.38	43.04	20.08
224	β Virginis.....	1	0.20	11. 42. 55.95	3.128	1		87. 23. 44.34		1	0.20	44.34	20.28
225	{ Groomb. 1830.. } { B. A. C. 4010... }	2	0.33	11. 44. 22.66	3.488	2		51. 12. 47.24		2	0.32	47.24	25.71
226	γ Ursæ Majoris	6	0.62	11. 45. 58.38	3.198	7		35. 28. 37.39		10	0.62	37.10	20.02
	γ Ursæ Majoris S.P.					3		35.74					
227	Lalande 22547.....	2	0.33	11. 51. 3.95	3.113	2		51. 17. 38.59		2	0.33	38.59	20.04
228	π Virginis	5	0.31	11. 53. 14.15	3.079	5		82. 33. 17.53		5	0.31	17.53	20.10
229	B. A. C. 4070.....	1	0.36	11. 57. 8.26	3.334	4	4	3. 35. 13.64	12.85	8	0.34	13.25	20.05
230	ε Virginis.....	3	0.38	11. 57. 37.14	3.064	3		80. 26. 22.00		3	0.38	22.00	20.05
231	ε Corvi	4	0.34	12. 2. 28.10	3.077	5		111. 47. 26.70		5	0.32	26.70	20.03
232	γ Corvi	2	0.33	12. 8. 8.93	3.077	4		106. 42. 51.36		4	0.32	51.36	20.02
233	13 Virginis.....	1	0.37	12. 11. 2.02	3.075	1		89. 57. 32.27		1	0.37	32.27	20.09
234	η Virginis.....	4	0.32	12. 12. 17.00	3.067	5		89. 50. 17.85		5	0.31	17.85	20.07
235	B. A. C. 4150.....	1	0.36	12. 12. 26.15	1.876	1	1	2. 44. 9.55	8.96	2	0.36	9.26	20.11
236	B. A. C. 4165.....			12. 14. (30)		1	1	1. 28. 26.82	24.36	2	0.32	25.59	19.96
237	B. A. C. 4198.....	1	0.31	12. 20. 5.69	3.108	1		105. 48. 23.56		1	0.31	23.56	20.02
238	δ Corvi.....	4	0.33	12. 22. 9.62	3.106	5		105. 41. 7.10		5	0.33	7.10	20.12
239	β Corvi	17	0.31	12. 26. 34.17	3.131	19		112. 34. 19.27		19	0.31	19.27	19.99
240	β Canum Venaticum.	2	0.40	12. 26. 39.58	2.865	2		47. 49. 55.64		2	0.40	55.64	19.64
241	γ Virginis (N. star)..			12. 34. (10)		4		90. 37. 51.74		4	0.31	51.74	19.85
242	γ Virginis (as one mass)	3	0.25	12. 34. 6.71	3.040			90. 38.		3	0.25	54.69	19.85
243	γ Virginis (S. star)..			12. 34. (10)		3		90. 37. 54.69					
244	B. A. C. 4339.....			12. 48. (o)		1	1	5. 46. 18.68	18.41	2	0.35	18.55	19.63
245	B. A. C. 4342.....			12. 48. (o)		1	1	5. 46. 37.35	36.50	2	0.35	36.93	19.60
246	δ Virginis.....	4	0.33	12. 48. 6.04	3.023	3		85. 47. 30.64		3	0.29	30.64	19.71
247	12 Can. Ven. (1st star)	1	0.32	12. 49. 1.76	2.821	1		50. 52. 46.06		1	0.32	46.06	19.60
248	12 Can. Ven. (2nd star)	4	0.24	12. 49. 3.08	2.820	3		50. 52. 33.27		3	0.19	33.27	19.54
249	ε Virginis.....	1	0.24	12. 54. 45.53	2.993	1		78. 14. 20.87		1	0.24	20.87	19.46
250	41 Comæ	1	0.39	13. 0. 1.67	2.888			61. 34.					
251	θ Virginis	1	0.40	13. 2. 14.34	3.101	1		94. 44. 32.93		1	0.40	32.93	19.37
252	43 Comæ (β)	1	0.39	13. 4. 54.93	2.811	1		61. 21. 55.31		1	0.39	55.31	18.35
253	γ Hydræ	2	0.37	13. 10. 49.76	3.247	2		112. 23. 1.82		2	0.37	1.82	19.11
254	Spica	46	0.34	13. 17. 20.96	+3.149	42		100. 22. 54.62		42	0.38	54.62	18.95
255	B. A. C. 4498.....	1	0.41	13. 20. 52.22	-2.847	1		4. 27. 59.85		1	0.41	59.85	18.82
256	ζ Virginis	10	0.37	13. 27. 6.26	+3.055	8		89. 49. 55.99		8	0.38	55.99	18.57
257	Piazzi XIII. 194 ...	1	0.41	13. 39. 34.62	3.001	1		82. 53. 52.83		1	0.41	52.83	18.19
258	τ Bootis	4	0.43	13. 40. 10.92	2.856	7	3	71. 47. 55.86	55.80	10	0.37	55.84	18.12
259	η Ursæ Majoris.....	10	0.45	13. 41. 39.84	2.376	9		39. 56. 29.07		9	0.46	29.07	18.15
260	B. A. C. 4614.....	1	0.42	13. 42. 4.98	0.144	1		11. 11.					
261	ν Bootis	2	0.38	13. 42. 17.41	2.895	2		73. 27. 40.65		2	0.38	40.65	18.04
262	η Bootis	31	0.40	13. 47. 35.46	2.859	32		70. 51. 12.11		32	0.39	12.11	18.23
263	τ Virginis	6	0.40	13. 54. 3.95	3.050	6		87. 43. 55.94		6	0.40	55.94	17.69
264	B. A. C. 4674.....	2	0.42	13. 54. 23.59	3.453	1		120. 57. 54.19		1	0.42	54.19	17.48
265	θ Centauri	1	0.41	13. 57. 54.89	+3.505	1		125. 37. 57.97		1	0.41	57.97	+18.09

CATALOGUE OF THE CONCLUDED MEAN R. A. AND THE MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
266	94 Virginis.....	1	0.06	13. 58. 24.65 ^{h m s}	+3.167	1		98. 10. 40.98 ^{o ' "}	"	1	0.06	40.98	+17.42
267	κ Virginis.....	8	0.40	14. 4. 57.20	3.195	7		99. 34. 39.02		7	0.40	39.02	17.14
268	ι Virginis.....	3	0.41	14. 8. 12.35	3.142	3		95. 17. 13.78		3	0.41	13.78	17.41
269	Arcturus.....	32	0.51	14. 8. 52.03	2.733	42	5	70. 2. 23.20	22.68	47	0.50	23.14	18.93
270	β Bootis.....	2	0.41	14. 10. 53.19	2.130	2		37. 56. 36.89		2	0.41	36.89	16.80
271	ρ Bootis.....	6	0.42	14. 25. 24.46	2.590	8	2	58. 58. 20.10	20.10	10	0.42	20.10	16.02
272	γ Bootis.....	4	0.43	14. 26. 4.54	+2.429	5	1	51. 2. 16.04	15.12	6	0.42	15.89	15.98
273	5 Ursæ Minoris....	3	0.46	14. 27. 54.19	-0.244	2		13. 38. 29.05		4	0.46	29.69	16.05
274	5 Ursæ Minoris S. P.					2		30.32					
275	π ¹ Bootis.....	3	0.43	14. 33. 43.40	+2.816	4	1	72. 56. 24.32	25.64	5	0.43	24.58	15.69
	π ² Bootis.....	2	0.44	14. 33. 44.01	2.816	2		72. 56. 26.04		2	0.44	26.04	15.71
276	ζ Bootis.....	4	0.41	14. 34. 2.11	2.861	3		75. 37. 46.29		3	0.41	46.29	15.70
277	ε Bootis (as one mass)	26	0.46	14. 38. 28.79	2.622	26		62. 17. 42.38		26	0.40	42.38	15.45
278	109 Virginis.....	2	0.38	14. 38. 43.10	3.029	2		87. 28. 34.44		2	0.38	34.44	15.46
279	8 Libræ.....	1	0.32	14. 42. 27.21	3.307	1		105. 22. 26.50		1	0.32	26.50	15.30
280	α Libræ.....	13	0.37	14. 42. 38.57	3.307	13		105. 25. 9.06		13	0.40	9.06	15.24
281	ξ ¹ Bootis.....	1	0.42	14. 44. 30.95	2.755	1		70. 16. 36.84		1	0.42	36.84	15.11
282	ξ ² Bootis.....	4	0.46	14. 44. 31.02	2.767	3		70. 16. 43.24		3	0.46	43.24	15.25
283	ξ ² Libræ.....	1	0.06	14. 48. 41.48	3.245	1		100. 48. 17.17		1	0.06	17.17	14.90
284	*	1	0.41	14. 51. 4.43	+2.452	1		55. 43. 40.74		1	0.41	40.74	14.73
285	β Ursæ Minoris....	13	0.49	14. 51. 11.61	-0.272	16	11	15. 14. 8.14	8.55	28	0.46	8.35	14.76
	β Ursæ Minoris S. P.					1		9.42					
286	δ Libræ.....	1	0.36	14. 53. 1.04	+3.197	1		97. 55. 26.92		1	0.36	26.92	14.62
287	β Bootis.....	7	0.46	14. 56. 19.96	2.264	6		49. 1. 9.97		6	0.45	9.97	14.46
288	ψ Bootis.....	7	0.43	14. 58. 3.74	2.572	7	1	62. 28. 6.79	5.50	8	0.41	6.63	14.30
289	W. B. XIV. 1093....	1	0.23	14. 58. 3.89	3.221	1		98. 57. 18.67		1	0.23	18.67	14.29
290	δ Lupi.....	1	0.49	15. 8. 46.69	3.631	1		119. 35. 48.30		1	0.49	48.30	13.69
291	β Libræ.....	23	0.44	15. 8. 59.69	3.220	24		98. 49. 46.72		24	0.45	46.72	13.61
292	δ Bootis.....	2	0.66	15. 9. 29.79	2.421	2		56. 7. 35.78		2	0.66	35.78	13.67
293	*	1	0.41	15. 12. 57.88	2.293	1		52. 2. 37.97		1	0.41	37.97	13.36
294	δ ² Libræ.....	6	0.47	15. 14. 43.52	3.333	6		104. 35. 53.73		6	0.47	53.73	13.24
295	μ ¹ Bootis.....	5	0.47	15. 18. 51.63	2.267	5		52. 5. 52.71		5	0.47	52.71	12.89
296	μ ² Bootis.....	2	0.47	15. 18. 53.04	2.277	2		52. 7. 39.50		2	0.45	39.50	12.97
297	ξ ¹ Libræ.....	3	0.39	15. 19. 51.73	3.374	3		106. 11. 36.06		3	0.39	36.06	12.94
298	ξ ² Libræ.....	1	0.49	15. 21. 9.48	3.382	1		106. 55. 22.71		1	0.49	22.71	12.79
299	ι Draconis.....	2	0.66	15. 21. 37.27	1.332	3	1	30. 30. 37.73	36.40	5	0.47	37.50	12.76
	ι Draconis S. P.....					1		38.11					
300	β Coronæ.....	2	0.47	15. 21. 41.11	+2.480	2		60. 22. 40.62		2	0.47	40.62	12.71
301	B. A. C. 5140 S. P..	1	0.06	15. 27. 36.95	-2.234	1		2. 12. 22.28		1	0.06	22.28	12.38
302	δ Serpentis.....	1	0.46	15. 27. 41.18	+2.866	3		78. 57. 38.43		3	0.46	38.43	12.32
303	δ Serpentis.....	3	0.46	15. 27. 41.20	2.866	3		78. 57. 35.14		3	0.46	35.14	12.32
304	α Coronæ.....	26	0.52	15. 28. 22.83	2.538	28	2	62. 46. 51.19	51.42	30	0.50	51.21	12.38
305	B. A. C. 5188.....	1	0.46	15. 35. 4.25	3.351			104. 34.					
306	η Libræ.....	1	0.36	15. 35. 41.79	3.371	1		105. 11. 36.84		1	0.36	36.84	11.86
307	α Serpentis.....	22	0.52	15. 36. 55.91	2.951	25		83. 6. 7.75		25	0.48	7.75	11.65
308	β Serpentis.....	2	0.46	15. 39. 18.69	2.767	1		74. 6. 30.81		1	0.43	30.81	11.56
309	μ Serpentis.....	3	0.49	15. 41. 50.89	+3.128	3		92. 58. 12.97		3	0.49	12.97	+11.38

CATALOGUE OF THE CONCLUDED MEAN R. A. AND N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
310	κ Serpentis	2	0.66	^h 15. 42. ^m 2.03	+2.700	2		^s 71. 23. 42.67	"	2	0.66	42.67	+11.41
311	ϵ Serpentis	2	0.49	15. 43. 23.50	2.989	2		85. 4. 12.39		2	0.49	12.39	11.21
312	θ Libræ	3	0.41	15. 45. 20.81	3.410	3		106. 17. 14.78		3	0.41	14.78	10.99
313	*	1	0.42	15. 48. 41.13	+3.349			103. 55.					
314	ζ Ursæ Minoris	3	0.48	15. 49. 30.99	-2.328	6	4	11. 44. 59.17	58.15	10	0.49	58.76	10.81
315	W. B. XV. 942	1	0.41	15. 49. 32.34	+3.349	1		103. 53. 22.24		1	0.41	22.24	10.81
316	γ Serpentis	5	0.48	15. 49. 34.40	2.769	5		73. 50. 55.74		5	0.48	55.74	12.05
317	48 Libræ	2	0.41	15. 49. 50.92	3.349	1		103. 50. 42.20		1	0.41	42.20	10.78
318	δ Scorpil	1	0.51	15. 51. 31.72	3.535	2		112. 11. 36.21		2	0.50	36.21	10.68
319	β^1 Scorpil	8	0.47	15. 56. 46.81	3.478	8		109. 23. 35.53		8	0.47	35.53	10.29
320	β^2 Scorpil	2	0.53	15. 56. 47.30	3.470	2		109. 23. 24.16		2	0.45	24.16	10.36
321	ω^2 Scorpil	3	0.47	15. 58. 40.32	3.508	3		110. 27. 42.13		3	0.47	42.13	10.15
322	W. B. XV. 1118 ...	1	0.41	15. 58. 45.01	3.351	1		103. 39. 58.97		1	0.41	58.97	10.12
323	W. B. XVI. 38	1	0.39	16. 2. 43.08	3.353	1		103. 35. 47.24		1	0.39	47.24	9.81
324	ν^1 Scorpil	1	0.52	16. 3. 19.28	3.482			109. 4.					
325	ν^2 Scorpil	2	0.50	16. 3. 20.49	3.478	2		109. 4. 8.55		2	0.50	8.55	9.75
326	Lalande 29490.	6	0.46	16. 4. 0.53	3.349	5		103. 20. 56.41		5	0.46	56.41	9.72
327	*	2	0.47	16. 4. 10.57	3.349			103. 21.					
328	δ Ophiuchi	8	0.50	16. 6. 32.48	3.138	8		93. 18. 24.00		8	0.50	24.00	9.64
329	ϵ Ophiuchi	6	0.49	16. 10. 26.49	3.168	6		94. 19. 30.59		6	0.49	30.59	9.19
330	τ Herculis	2	0.51	16. 15. 15.75	1.799	3		43. 19. 47.00		3	0.50	47.00	8.83
331	γ Herculis	5	0.48	16. 15. 20.95	2.645	6	1	70. 29. 37.47	37.49	7	0.49	37.47	8.80
332	Antares.	10	0.48	16. 20. 16.72	3.665	8		116. 5. 47.11		8	0.49	47.11	8.46
333	22 Scorpil	2	0.44	16. 21. 9.64	3.635	2		114. 46. 56.54		2	0.44	56.54	8.40
334	η Draconis	2	0.74	16. 21. 58.85	0.820	4	2	28. 8. 51.03	50.88	6	0.58	50.98	8.24
335	ϕ Ophiuchi	1	0.37	16. 22. 36.87	3.430	1		106. 16. 58.82		1	0.37	58.82	8.30
336	λ Ophiuchi	1	0.47	16. 23. 24.10	3.027	1		87. 41. 9.39		1	0.47	9.39	8.27
337	β Herculis			16. 23. (50)		1	1	68. 10. 57.17	57.53	2	0.48	57.35	8.17
338	ζ Ophiuchi	5	0.51	16. 28. 57.56	3.299	4		100. 15. 39.10		4	0.49	39.10	7.73
339	B. A. C. 5579	1	0.37	16. 32. 57.62	3.461	1		107. 26. 55.55		1	0.37	55.55	7.41
340	ζ Herculis	8	0.54	16. 35. 40.12	2.265	13	7	58. 7. 27.45	27.60	20	0.50	27.50	6.79
341	ϵ Scorpil	2	0.48	16. 40. 31.17	3.875	2		124. 1. 1.81		2	0.48	1.81	7.12
342	*	1	0.46	16. 44. 55.04	2.719	1		74. 26. 59.77		1	0.46	59.77	6.45
343	κ Ophiuchi	5	0.54	16. 50. 37.08	2.838	5		80. 23. 22.37		5	0.54	22.37	5.96
344	*	1	0.46	16. 51. 8.70	3.358	1		102. 39. 41.64		1	0.46	41.64	5.93
345	ϵ Herculis	3	0.65	16. 54. 35.39	+2.294	2		58. 51. 3.50		2	0.49	3.50	5.58
346	ϵ Ursæ Minoris	5	0.43	17. 1. 25.44	-6.518	6	2	7. 43. 33.73	32.64	9	0.47	33.54	5.08
	ϵ Ursæ Minoris S. P.					1		34.22					
347	η Ophiuchi	7	0.44	17. 1. 50.25	+3.435	7		105. 32. 7.44		7	0.44	7.44	4.92
348	α Herculis	18	0.55	17. 7. 51.29	2.732	20		75. 26. 9.77		20	0.50	9.77	4.46
349	ζ Draconis			17. 8. (20)		2	2	24. 6. 6.00	6.09	4	0.51	6.05	4.47
350	δ Herculis	1	0.47	17. 8. 55.08	2.459	2	1	64. 58. 55.38	54.59	3	0.50	55.12	4.59
351	ν Herculis	1	0.45	17. 11. 49.23	2.212	2	1	56. 44. 11.75	10.37	3	0.39	11.29	4.17
352	ξ Ophiuchi	1	0.52	17. 12. 4.74	3.592	1		110. 56. 50.37		1	0.52	50.37	4.36
353	θ Ophiuchi	3	0.45	17. 12. 51.76	3.680	2		114. 50. 40.95		2	0.45	40.95	+ 4.15
354	d Ophiuchi	1	0.57	17. 17. 50.68	+3.819			119. 44.					

322. Of the 7th magnitude.

342. Of the 12th magnitude.

344. This is one of Hind's Variable Stars; on June 17 it was noted as being too faint for observation, and of the 14th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Frac- tion of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
355	ρ^1 Herculis	1	0.62	17. 18. 32.32 ^{h m s}	+2.069	1		52. 42. 48.58 ^{o ' "}	"	1	0.62	48.58	+ 3.61
356	ρ^2 Herculis	1	0.62	17. 18. 32.80	2.073	1		52. 42. 51.40		1	0.62	51.40	3.59
357	σ Ophiuchi	2	0.56	17. 19. 7.56	2.977	2		85. 43. 32.80		2	0.56	32.80	3.54
358	β Draconis			17. 27. (o)		1		37. 35. 9.74		1	0.49	9.74	2.86
359	W. B. XVII. 508 ..	3	0.59	17. 27. 7.48	2.774	2		77. 22. 45.83		2	0.57	45.83	2.87
360	α Ophiuchi	33	0.51	17. 28. 1.16	2.780	31		77. 19. 39.28		31	0.52	39.28	2.98
361	W. B. XVII. 672 ..	1	0.41	17. 34. 30.73	3.180			94. 41.					
362	ι Herculis	2	0.54	17. 35. 15.35	1.713	2		43. 54. 43.26		2	0.54	43.26	2.15
363	β Ophiuchi	4	0.55	17. 36. 6.75	2.964	5		85. 21. 58.33		5	0.55	58.33	1.92
364	ω Draconis			17. 37. (50)		1	1	21. 10. 25.58	25.74	2	0.67	25.66	1.66
365	γ Ophiuchi	4	0.57	17. 40. 25.49	3.004	5		87. 13. 57.01		5	0.56	57.01	1.79
366	μ Herculis	4	0.61	17. 40. 37.70	2.344	4	1	62. 11. 20.63	20.32	5	0.61	20.57	2.42
367	89 Herculis	1	0.45	17. 49. 24.45	2.425	1		63. 55. 21.60		1	0.45	21.60	0.89
368	ν Ophiuchi	3	0.57	17. 50. 49.51	3.304	3		99. 45. 1.53		3	0.57	1.53	0.91
369	θ Herculis	1	0.60	17. 51. 8.61	2.055	1		52. 43. 38.08		1	0.60	38.08	0.73
370	ν Herculis	1	0.64	17. 52. 48.28	2.296	1		59. 47. 42.79		1	0.64	42.79	0.63
371	γ Draconis	16	0.49	17. 53. 8.85	1.393	18		38. 29. 30.12		18	0.51	30.12	0.64
372	67 Ophiuchi	1	0.63	17. 53. 11.00	3.010	1		87. 3. 25.79		1	0.63	25.79	0.63
373	γ^2 Sagittarii	2	0.65	17. 56. 14.07	3.858	2		120. 25. 11.30		2	0.65	11.30	+ 0.57
374	72 Ophiuchi	5	0.58	18. 0. 17.16	2.844	5		80. 27. 12.38		5	0.58	12.38	- 0.10
375	μ Sagittarii	18	0.59	18. 4. 51.17	3.587	17		111. 5. 33.24		17	0.55	33.24	0.44
376	η Serpentis	5	0.59	18. 13. 36.02	3.102	5		92. 55. 59.18		5	0.59	59.18	0.54
377	ϵ Sagittarii	1	0.61	18. 14. 16.79	3.987	1		124. 26. 57.95		1	0.61	57.95	1.16
378	λ Sagittarii	1	0.45	18. 18. 46.30	+3.707	1		115. 29. 54.27		1	0.45	54.27	1.41
379	δ Ursæ Minoris	20	0.30	18. 20. 24.11	-19.302	30	1	3. 24. 8.17	10.49	44	0.37	8.40	1.79
380	α Lyrae	26	0.44	18. 31. 53.67	+2.031	23	1	51. 21. 7.43	8.72	24	0.50	7.48	3.08
381	ϕ Sagittarii	3	0.63	18. 36. 20.71	3.758	3		117. 8. 19.16		3	0.66	19.16	3.13
382	β^1 Lyrae	29	0.58	18. 44. 34.73	2.213	26	1	56. 48. 25.90	26.81	27	0.52	25.93	3.86
383	β^2 Lyrae	5	0.60	18. 44. 36.66	2.213	5		56. 49. 5.81		5	0.61	5.81	3.86
384	*	1	0.56	18. 52. 26.22	2.725	1		75. 4. 9.72		1	0.56	9.72	4.56
385	ϵ Aquilæ	5	0.58	18. 52. 51.63	2.723	4		75. 7. 48.74		4	0.57	48.74	4.48
386	γ Lyrae	4	0.65	18. 53. 22.19	2.244	4		57. 30. 42.25		4	0.65	42.25	4.65
387	ϕ Sagittarii	2	0.49	18. 55. 45.13	3.600	2		111. 57. 16.31		2	0.49	16.31	4.80
388	λ Aquilæ	3	0.66	18. 58. 20.43	3.187	3		95. 6. 5.88		3	0.66	5.88	4.98
389	ζ Aquilæ	24	0.57	18. 58. 33.74	2.755	19		76. 21. 15.62		19	0.52	15.62	5.01
390	W. B. XVIII. 1539	1	0.60	18. 59. 27.91	2.759	1		76. 22. 58.40		1	0.60	58.40	5.15
391	π Sagittarii	1	0.45	19. 0. 53.90	3.575	1		111. 15. 19.68		1	0.53	19.68	5.27
392	*	1	0.56	19. 4. 30.90	3.330			101. 25.					
393	Lalande 36268.	1	0.64	19. 9. 37.39	2.746	1		75. 42. 55.29		1	0.64	55.29	6.00
394	ω Aquilæ	5	0.62	19. 10. 49.34	2.818	9	4	78. 40. 10.81	10.18	13	0.63	10.62	6.16
395	δ Draconis	2	0.48	19. 12. 30.11	0.041	2	2	22. 36. 2.10	0.40	4	0.47	1.25	6.31
396	κ Cygni	3	0.68	19. 13. 39.55	1.389	3		36. 54. 16.96		3	0.68	16.96	6.42
397	δ Aquilæ	20	0.64	19. 17. 59.12	3.025	17		87. 10. 42.15		17	0.58	42.15	6.82
398	π Draconis	2	0.71	19. 19. 53.80	0.332	3	1	24. 34. 19.33	19.49	4	0.67	19.37	6.87
399	α Vulpeculæ	5	0.66	19. 22. 30.37	+2.495	5		65. 38. 2.02		5	0.66	2.02	- 6.97

384. This star is identical with No. 593 in the Catalogue for 1850.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
400	β^1 Cygni.....	2	0.67	19. 24. 42.80	+2.420	3	1	62. 21. 0.48	1.44	4	0.65	0.72	- 7.26
401	μ Aquilæ.....	5	0.66	19. 26. 48.64	2.934	5		82. 56. 1.63		5	0.66	1.63	7.32
402	κ Aquilæ.....	4	0.66	19. 28. 52.42	3.233	4		97. 21. 16.55		4	0.66	16.55	7.60
403	*	1	0.60	19. 32. 53.70	2.678	1		72. 16. 20.19		1	0.60	20.19	7.92
404	α Sagittæ.....	3	0.63	19. 33. 26.20	2.685	4		72. 19. 30.94		4	0.64	30.94	7.98
405	φ Cygni.....	1	0.64	19. 33. 29.73	2.368	5	4	60. 11. 13.70	12.57	9	0.68	13.20	8.01
406	ϵ^2 Sagittarii.....	3	0.68	19. 33. 59.61	3.440	4		106. 28. 7.32		4	0.70	7.32	8.03
407	*	1	0.46	19. 37. 20.06	3.221	1		96. 59. 37.52		1	0.46	37.52	8.26
408	γ Aquilæ.....	24	0.65	19. 39. 10.54	2.855	16		79. 44. 46.78		16	0.59	46.78	8.42
409	δ Cygni.....	3	0.71	19. 40. 18.96	1.876	3		45. 13. 50.41		3	0.71	50.41	8.50
410	δ Sagittæ.....	2	0.65	19. 40. 44.68	2.684	2		71. 49. 48.42		2	0.65	48.42	8.58
411	α Aquilæ.....	29	0.53	19. 43. 30.80	2.929	16		81. 31. 17.14		16	0.43	17.14	9.14
412	η Aquilæ.....	4	0.67	19. 44. 52.88	3.060	4		89. 22. 22.47		4	0.67	22.47	8.82
413	β Aquilæ.....	29	0.67	19. 47. 59.67	2.950	16		83. 57. 42.21		16	0.63	42.21	8.64
414	ϵ Sagittarii.....	5	0.66	19. 53. 29.31	3.705	6		118. 7. 10.46		6	0.66	10.46	9.58
415	ρ Draconis.....	5	0.69	20. 2. 7.61	0.300	9	5	22. 33. 3.57	3.72	14	0.69	3.62	10.23
416	θ Aquilæ.....	7	0.66	20. 3. 36.87	3.103	8		91. 15. 35.33		8	0.66	35.33	10.32
417	ρ Aquilæ.....	1	0.60	20. 7. 22.71	2.779	1		75. 15. 10.61		1	0.60	10.61	10.66
418	α^1 Capricorni.....	5	0.68	20. 9. 23.14	3.334	3		102. 57. 52.50		3	0.66	52.50	10.75
419	α^2 Capricorni.....	17	0.70	20. 9. 46.97	+3.335	14		103. 0. 9.60		14	0.68	9.60	10.77
420	λ Ursæ Minoris.....	16	0.52	20. 12. 7.93	-53.626	11	6	1. 8. 10.97	10.80	22	0.58	11.12	10.92
	λ Ursæ Minoris S. P.					5		11.82					
421	B. A. C. 6992.....	1	0.70	20. 12. 23.93	+3.379	1		105. 15. 3.22		1	0.70	3.22	10.94
422	β Capricorni.....	5	0.76	20. 12. 38.15	3.380	4		105. 14. 52.64		4	0.75	52.64	11.01
423	γ Cygni.....	5	0.69	20. 16. 52.89	2.153	6	2	50. 13. 4.23	3.82	8	0.68	4.13	11.30
424	B. A. C. 7041.....			20. 20. (10)		1		47. 52. 49.17		1	0.60	49.17	11.52
425	ρ Capricorni.....	1	0.53	20. 20. 21.32	3.433	1		108. 18. 8.35		1	0.53	8.35	11.55
426	ϵ Delphini.....	6	0.65	20. 26. 5.62	2.868	5		79. 12. 0.47		5	0.65	0.47	11.93
427	γ^0 Aquilæ.....	1	0.60	20. 28. 58.02	3.134	1		93. 3. 43.83		1	0.60	43.83	12.21
428	β Delphini.....	5	0.65	20. 30. 33.72	2.813	5		75. 55. 12.67		5	0.65	12.67	12.23
429	ν Capricorni.....	2	0.68	20. 31. 33.66	3.426	2		108. 39. 32.69		2	0.68	32.69	12.36
430	B. A. C. 7146.....			20. 32. (10)		1		74. 40.	56.26	1	0.67	56.26	12.38
431	α Delphini.....	6	0.67	20. 32. 43.04	2.791	7		74. 36. 38.23		7	0.67	38.23	12.41
432	Lalande 39944.....	1	0.60	20. 33. 43.23	2.810	1		75. 59. 54.96		1	0.60	54.96	12.47
433	α Cygni.....	12	0.44	20. 36. 21.31	2.042	9	1	45. 14. 59.97	60.87	10	0.46	60.06	12.65
434	δ Delphini.....	5	0.65	20. 36. 30.17	2.804	5		75. 27. 25.73		5	0.65	25.73	12.63
435	ϵ Aquarii.....	5	0.69	20. 39. 36.39	3.259	5		100. 2. 15.14		5	0.69	15.14	12.84
436	γ^1 Delphini.....	2	0.76	20. 39. 43.94	2.786			74. 25.					
437	γ^2 Delphini.....	5	0.71	20. 39. 44.73	2.785	5		74. 24. 35.20		5	0.71	35.20	12.72
438	ϵ Cygni.....	3	0.74	20. 40. 10.99	2.426	3		56. 35. 8.34		3	0.74	8.34	13.23
439	31 Vulpeculæ.....	2		20. 45. (40)		1	1	63. 27. 28.45	29.19	2	0.60	28.82	13.26
440	32 Vulpeculæ.....	3	0.71	20. 48. 12.64	2.557	9	6	62. 30. 23.33	23.31	15	0.70	23.32	13.47
441	ν Cygni.....	5	0.70	20. 51. 37.16	+2.234	4		49. 24. 16.45		4	0.68	16.45	13.68
442	76 Draconis.....	3	0.70	20. 53. 3.88	-3.832	4	3	8. 1. 29.45	28.97	7	0.70	29.24	13.78
443	B. A. C. 7311.....			20. 56. (30)		1	1	14. 39. 5.52	5.60	2	0.60	5.56	14.00
444	θ Capricorni.....	5	0.65	20. 57. 33.91	+3.387	5		107. 49. 17.61		5	0.65	17.61	-14.00

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—continued.

No.	Star's Name.	Num- ber of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
445	61 Cygni. (1st star)	13	0.72	21. 0. 13.33	+2.673	11		51. 58. 50.00	"	11	0.70	50.00	-17.42
446	61 Cygni. (2nd star)	7	0.72	21. 0. 14.80	2.673	4		51. 58. 55.05		3	0.65	55.05	17.42
447	♈ Aquarii.	1	0.83	21. 1. 28.50	3.276	1		101. 58. 17.75		1	0.83	17.75	14.28
448	ζ Cygni.	24	0.68	21. 6. 35.83	2.550	17	1	60. 22. 54.94	54.60	18	0.63	54.92	14.53
449	29 Capricorni.	2	0.72	21. 7. 29.70	3.334	2		105. 47. 14.77		2	0.72	14.77	14.66
450	α Equulei.	5	0.74	21. 8. 22.47	3.005	4		85. 21. 54.76		4	0.73	54.76	14.61
451	ν Cygni.			21. 11. (50)		1	1	55. 43. 34.49	34.77	2	0.60	34.63	14.91
452	α Capricorni.	6	0.66	21. 13. 56.62	3.357	5		107. 27. 57.51		5	0.65	57.51	15.07
453	α Cephei.	9	0.64	21. 15. 1.20	1.438	14	5	28. 2. 40.00	40.52	19	0.74	40.14	15.08
454	β Aquarii.	19	0.71	21. 23. 42.68	3.168	14		96. 13. 25.56		14	0.65	25.40	15.60
455	β Cephei.	8	0.63	21. 26. 43.01	+0.806	13	7	20. 5. 34.12	34.09	20	0.67	34.11	15.68
456	B. A. C. 7504 S.P. .	2	0.28	21. 28. 21.08	-10.029	1		3. 35. 19.58		1	0.26	19.58	15.82
457	ξ Aquarii.	5	0.71	21. 29. 48.99	+3.202	5		98. 31. 11.51		5	0.71	11.51	15.89
458	W. B. XXI. 755 ...	1	0.73	21. 31. 42.39	2.940	1		80. 46. 48.15		1	0.73	48.15	16.01
459	γ Capricorni.	2	0.76	21. 31. 49.79	3.341	2		107. 19. 57.55		2	0.76	57.55	16.02
460	ε Pegasi.	29	0.68	21. 36. 52.03	2.951	17		80. 48. 21.02		17	0.62	21.02	16.29
461	δ Capricorni.	7	0.68	21. 38. 48.70	3.323	7		106. 48. 2.38		7	0.68	2.38	16.12
462	μ Capricorni.	3	0.58	21. 45. 10.02	3.285	3		104. 15. 2.20		3	0.58	2.20	16.72
463	16 Pegasi.	6	0.67	21. 46. 17.05	2.730	11	4	64. 46. 26.47	26.20	15	0.69	26.40	16.72
464	79 Draconis.			21. 51. (0)		1	1	17. 0. 7.76	4.72	2	0.60	6.24	16.92
465	B. A. C. 7658.			21. 52. (30)		1	1	27. 4. 57.95	58.34	2	0.61	58.15	17.01
466	α Aquarii.	31	0.72	21. 58. 7.75	3.083	22		91. 2. 29.42		22	0.70	29.42	17.29
467	ι Aquarii.	3	0.58	21. 58. 23.04	3.252	3		104. 35. 25.26		3	0.58	25.26	17.25
468	ι Pegasi.	5	0.73	22. 0. 4.66	2.788	6	1	65. 22. 51.44	49.49	7	0.75	51.16	17.42
469	θ Pegasi.	5	0.66	22. 2. 40.93	3.033	5		84. 31. 59.97		5	0.66	59.97	17.53
470	*	2	0.84	22. 3. 25.22	2.131	2		34. 41. 48.22		2	0.84	48.22	17.52
471	*	1	0.83	22. 4. 50.22	2.140			34. 39.					
472	24 Cephei.			22. 7. (0)		1	1	18. 23. 31.99	32.43	2	0.63	32.21	17.65
473	θ Aquarii.	8	0.69	22. 8. 58.07	3.175	8		98. 31. 23.01		8	0.69	23.01	17.75
474	B. A. C. 7786.			22. 12. (50)		1	1	24. 36. 57.06	55.98	2	0.60	56.52	17.90
475	γ Aquarii.	5	0.71	22. 13. 57.52	3.106	6		92. 8. 10.46		6	0.70	10.46	17.99
476	σ Aquarii.	1	0.91	22. 22. 45.50	+3.184	1		101. 26. 19.66		1	0.91	19.66	18.36
477	B. A. C. 7851.	5	0.51	22. 24. 26.06	-3.512	4	2	4. 38. 40.93	40.35	7	0.75	40.85	18.35
478	B. A. C. 7851 S.P. .					1		41.52					
478	B. A. C. 7854 S.P. .	2	0.28	22. 24. 57.62	-3.694	2		4. 31. 48.33		2	0.28	48.33	18.38
479	α Lacertæ.	5	0.71	22. 25. 9.41	+2.457	4		40. 28. 55.46		4	0.70	55.46	18.35
480	η Aquarii.	5	0.69	22. 27. 41.89	3.087	5		90. 53. 0.72		5	0.69	0.72	18.40
481	*			22. 31. (20)		1	1	2. 40. 38.10	39.24	2	0.70	38.67	18.57
482	ζ Pegasi.	17	0.71	22. 34. 1.89	2.990	14		79. 56. 42.18		14	0.70	42.18	18.68
483	η Pegasi.	1	0.71	22. 36. 1.60	2.805	1		60. 33. 24.17		1	0.71	24.17	18.71
484	τ² Aquarii.	2	0.76	22. 41. 42.01	3.187	1		104. 22. 38.33		1	0.84	38.33	18.90
485	μ Pegasi.	3	0.79	22. 42. 48.91	2.888	3		66. 11. 1.85		3	0.79	1.85	18.91
486	λ Aquarii.	5	0.75	22. 44. 50.30	3.133	5		98. 22. 16.56		5	0.75	16.56	19.05
487	δ Aquarii.	6	0.80	22. 46. 44.27	3.195	5		106. 36. 42.65		5	0.81	42.65	19.06
488	Fomalhaut.	10	0.71	22. 49. 24.39	3.335	11		120. 24. 39.04		11	0.75	39.04	18.96
489	ο Andromedæ.	1	0.73	22. 55. 4.63	+2.745	1		48. 28. 24.33		1	0.73	24.33	-19.28

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D. OF STARS—concluded.

No.	Star's Name.	Num- ber of Obs. of R. A.	Frac- tion of Year for Mean of Obs.	Mean R. A. 1851, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1851, Jan. 1.		Whole Number of Obs. of N. P. D.	Frac- tion of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
490	β Pegasi.....	1	0.88	^h 22. 56. 33. ^m 45	+ 2.898	3	3	62. 43. 27. ^s 56	29.88	6	0.69	28.72	-19.46
491	α Pegasi.....	23	0.67	22. 57. 20.51	2.983	23		75. 35. 43.90		23	0.77	43.90	19.31
492	ϕ Aquarii.....	4	0.71	23. 6. 36.23	3.114	4		96. 51. 4.33		4	0.71	4.33	19.35
493	γ Piscium.....	4	0.71	23. 9. 26.51	3.110	5		87. 31. 51.06		5	0.72	51.06	19.61
494	ψ^3 Aquarii.....	4	0.71	23. 11. 12.55	3.128	3		100. 25. 27.96		3	0.76	27.96	19.62
495	67 Pegasi.....			23. 17. (30)		1	1	58. 25. 58.49	58.54	2	0.83	58.52	19.76
496	κ Piscium.....	6	0.73	23. 19. 17.67	3.079	6		89. 33. 32.54		6	0.73	32.54	19.64
497	{ Cephei 39 (Hev.) } { B. A. C. 8213... }	1	0.88	23. 27. 49.02	0.068	4	3	3. 30. 53.31	53.13	7	0.83	53.23	19.88
498	B. A. C. 8221.....	1	0.84	23. 29. 55.78	3.124	2		103. 53. 8.92		2	0.84	8.92	19.90
499	Andromedæ.....	2	0.76	23. 30. 50.46	2.918	3	1	47. 33. 23.63	21.70	4	0.81	23.15	19.94
500	ι Piscium.....	11	0.72	23. 32. 17.27	3.085	9		85. 10. 50.49		9	0.77	50.49	19.47
501	γ Cephei.....	3	0.83	23. 33. 16.69	2.388	3	2	13. 11. 57.30	57.49	6	0.77	57.35	20.08
	γ Cephei S.P.					1		57.20					
502	B. A. C. 8239.....	1	0.84	23. 33. 26.06	3.114	1		102. 30. 23.14		1	0.84	23.14	19.96
503	λ Piscium.....	1	0.61	23. 34. 26.48	3.064			89. 2.					
504	20 Piscium.....	1	0.61	23. 40. 16.87	3.085			93. 35.					
505	δ Sculptoris.....	3	0.84	23. 41. 9.40	3.141	3		118. 57. 14.56		3	0.84	14.56	19.89
506	27 Piscium.....	2	0.73	23. 51. 2.69	3.072	2		94. 22. 54.12		2	0.73	54.12	19.92
507	ω Piscium.....	7	0.84	23. 51. 39.77	3.080	8		83. 57. 41.79		8	0.85	41.79	19.96
508	B. A. C. 8336.....			23. 52. (40)		2	1	4. 7. 22.70	24.09	3	0.78	23.16	20.04
509	2 Ceti.....	4	0.83	23. 56. 6.17	3.082	4		108. 9. 55.00		4	0.83	55.00	20.07
510	33 Piscium.....	3	0.49	23. 57. 42.51	+ 3.076	2		96. 32. 26.59		2	0.40	26.59	-20.10

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1851.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
36	W. B. I. 824.	0.10029	0.08981	1.44866	0.08014	83.981	9.89542	0.06462	0.84779	0.21628	111.752
41	69 Ceti.	0.09884	0.09234	1.44820	0.07908	84.014	9.88263	0.08072	0.91851	0.24374	107.045
42	B. A. C. 741.	0.09895	0.09268	1.45010	0.08234	83.609	9.93425	0.02940	0.92410	0.24577	107.659
56	Groombridge 660.	0.10282	0.10615	1.46595	0.09720	80.043	0.17210	9.84622	1.07183	0.29067	92.318
72	37 Eridani.	0.09090	0.09990	1.44594	0.07767	84.311	9.81848	0.10114	1.18199	0.31651	91.924
91	B. A. C. 1562.	0.08647	0.10431	1.45794	0.08241	83.036	0.09193	0.03317	1.29056	0.33487	74.642
94	B. A. C. 1592.	0.08534	0.10219	1.44512	0.07823	84.563	9.79390	0.09312	1.29903	0.33589	85.398
103	λ Orionis.	0.08269	0.10276	1.45179	0.07979	84.081	9.97372	0.07018	1.34463	0.34039	75.805
109	Lalande 10669.	0.08242	0.10516	1.45839	0.08064	83.344	0.09868	0.05925	1.35382	0.34097	68.050
114	Lalande 11108.	0.08097	0.10525	1.45837	0.07999	83.485	0.09847	0.06834	1.37411	0.34197	66.036
119	Rümker 1680.	0.07982	0.10529	1.45838	0.07946	83.598	0.09854	0.07537	1.38962	0.34238	64.468
120	B. A. C. 1937.	0.07977	0.10511	1.45798	0.07944	83.647	0.09258	0.07573	1.39017	0.34238	64.834
121	5 Geminorum.	0.07892	0.10491	1.45756	0.07907	83.781	0.08594	0.08071	1.40148	0.34242	64.179
123	* { R. A. 6 ^h . 10 ^m . (0 ^s)... N. P. D. 63°. 58'... }	0.07801	0.10521	1.45823	0.07867	83.795	0.09635	0.08605	1.41288	0.34224	62.285
127	Lalande 12336.	0.07694	0.10508	1.45806	0.07822	83.923	0.09388	0.09231	1.42654	0.34170	61.094
128	Lalande 12395.	0.07668	0.10508	1.45809	0.07810	83.948	0.09419	0.09349	1.42899	0.34161	60.820
129	Lalande 12554.	0.07617	0.10487	1.45775	0.07793	84.036	0.08892	0.09609	1.43553	0.34115	60.578
130	Lalande 12557.	0.07617	0.10481	1.45763	0.07794	84.048	0.08700	0.09594	1.43555	0.34115	60.721
131	B. A. C. 2154.	0.07591	0.10477	1.45760	0.07783	84.079	0.08658	0.09740	1.43881	0.34093	60.429
134	ν Canis Majoris.	0.07587	0.10371	1.44132	0.08023	85.262	9.67506	0.06398	1.44094	0.34075	81.291
136	* { R. A. 6 ^h . 34 ^m . (50 ^s)... N. P. D. 40°. 29'... }	0.07352	0.11445	1.47157	0.07488	82.605	0.22280	0.11899	1.44772	0.34016	47.007
139	θ Canis Majoris.	0.07411	0.10267	1.44398	0.08022	85.254	9.75910	0.06368	1.46393	0.33822	77.303
140	μ Canis Majoris.	0.07387	0.10280	1.44324	0.08044	85.303	9.73620	0.06030	1.46651	0.33787	78.099
141	ϵ Canis Majoris.	0.07375	0.10313	1.44209	0.08076	85.353	9.70008	0.05610	1.46677	0.33782	79.449
159	B. A. C. 2699.	0.06502	0.10332	1.43682	0.08651	85.927	9.56771	9.97326	1.54178	0.31638	83.673
165	W. B. VIII. 484.	0.06497	0.09896	1.45159	0.07647	85.810	9.96997	0.11725	1.56113	0.30591	59.674
222	Lalande 22308.	0.05350	0.08121	1.44871	0.07253	88.319	9.90466	0.16541	1.65311	0.10772	67.313
237	B. A. C. 4198.	0.05345	0.07699	1.44877	0.08594	87.681	9.90643	9.96784	1.65302	0.04636	84.839
289	W. B. XIV. 1093.	0.06141	0.06173	1.45050	0.08184	88.341	9.94463	0.03695	1.59441	9.69798	101.138
313	* { R. A. 15 ^h . 48 ^m . (40 ^s)... N. P. D. 103°. 55'... }	0.06557	0.05777	1.45254	0.08238	88.127	9.99154	0.02921	1.55478	9.55602	106.700
315	W. B. XV. 942.	0.06557	0.05774	1.45252	0.08237	88.131	9.99154	0.02964	1.55403	9.55368	106.796
322	W. B. XV. 1118.	0.06645	0.05720	1.45257	0.08213	88.121	9.72296	0.10924	1.49757	9.40330	120.576
323	W. B. XVI. 38.	0.06685	0.05697	1.45259	0.08204	88.115	9.99260	0.03536	1.54188	9.51619	108.307
326	Lalande 29490.	0.06695	0.05694	1.45252	0.08195	88.122	9.99100	0.03665	1.54061	9.51240	108.509

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star Catalogue for 1851.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
327 *	{ R. A. 16 ^h . 4 ^m . (10 ^s) } { N. P. D. 103 ^o . 21'... }	0.06701	0.05692	1.45252	0.08194	88.120	9.99100	0.03665	1.54061	9.51240	108.509
342 *	{ R. A. 16 ^h . 45 ^m . (0 ^s) } { N. P. D. 74 ^o . 27'... }	0.07102	0.05481	1.44276	0.07699	89.084	9.72255	0.10930	1.49757	9.40330	120.585
361	W. B. XVII. 672....	0.07648	0.05443	1.44992	0.07940	88.018	9.92860	0.07589	1.43500	9.31427	121.189
390	W. B. XVIII. 1539..	0.08551	0.05450	1.44337	0.08069	87.804	9.74084	0.05675	1.29779	9.36829	138.085
392 *	{ R. A. 19 ^h . 4 ^m . (30 ^s) } { N. P. D. 101 ^o . 25'... }	0.08596	0.05487	1.45225	0.07783	87.258	9.98439	0.09863	1.28846	9.37890	125.211
393	Lalande 36268.....	0.08658	0.05475	1.44320	0.08126	87.686	9.73552	0.05160	1.27869	9.39065	139.305
403 *	{ R. A. 19 ^h . 32 ^m . (50 ^s) } { N. P. D. 72 ^o . 16'... }	0.08906	0.05527	1.44213	0.08221	87.495	9.70467	0.03341	1.23291	9.44843	142.799
407 *	{ R. A. 19 ^h . 37 ^m . (20 ^s) } { N. P. D. 97 ^o . 0'.... }	0.08905	0.05643	1.45056	0.07797	87.061	9.94453	0.09698	1.22365	9.46064	129.438
417	ρ Aquilæ.....	0.09215	0.05750	1.44361	0.08251	86.994	9.75134	0.02765	1.15903	9.54460	143.188
424	B. A. C. 7041.....	0.09748	0.05170	1.43266	0.09154	87.186	9.51725	9.91109	1.12974	9.58132	155.690
427	70 Aquilæ.....	0.09356	0.05950	1.44913	0.07839	86.621	9.90813	0.09074	1.10945	9.60621	133.422
432	Lalande 39944.....	0.09437	0.05925	1.44418	0.08291	86.649	9.77012	0.02099	1.09825	9.61960	143.579
439	31 Vulpeculæ.....	0.09668	0.05848	1.44043	0.08708	86.529	9.67827	9.95633	1.06926	9.65349	150.142
443	B. A. C. 7311.....	0.14095	0.00467	1.38738	0.13907	86.429	9.59720	9.72157	1.04307	9.68294	161.645
451	ν Cygni.....	0.10034	0.05916	1.43871	0.09122	86.058	9.66664	9.89319	1.00475	9.72437	153.462
458	W. B. XXI. 755.....	0.09826	0.06420	1.44622	0.08230	85.926	9.82924	0.03028	0.95421	9.77607	140.595
464	79 Draconis.....	0.14387	0.03277	1.41058	0.14124	82.727	9.75032	9.59248	0.90510	9.82375	159.845
465	B. A. C. 7658.....	0.12200	0.05025	1.42635	0.11749	84.030	9.72588	9.64742	0.90149	9.82716	159.243
472	24 Cephei.....	0.14177	0.04137	1.41776	0.13878	82.036	9.78778	9.56135	0.86543	9.86112	158.598
474	B. A. C. 7786.....	0.12802	0.05225	1.42741	0.12380	82.879	9.78480	9.58957	0.85114	9.87453	157.807
495	67 Pegasi.....	0.10615	0.07393	1.44591	0.09352	83.927	9.86550	9.83600	0.72341	0.00677	142.781

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS
AND
RIGHT ASCENSIONS AND NORTH POLAR DISTANCES
OF THE
SUN, MOON, AND PLANETS,

(The Right Ascensions of the Sun, Moon, and Planets generally corrected for Personal Equation, and the Right Ascensions of the Sun and Moon corrected for the Singular Personal Equation of one Observer (E); and the North Polar Distances of all Planets, corrected for Discordance of Direct and Reflexion Results, and for Flexure of the Telescope of the Transit-Circle)

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC:

WITH

THE INFERRED POSITION OF THE ECLIPTIC; THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE.

1851.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN, corrected for Refraction and Parallax : compared with those of the Nautical Almanac.

D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	D A Y.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1851.							1851.						
Jan. 6	2. 21'42	21'50	+0'08	32. 32'78	34'40	+1'62	July 7	2. 16'63	16'60	-0'03	31. 35'30	30'20	-5'10
9	2. 21'13	21'10	-0'03	32. 33'93	34'20	+0'27	10	2. 16'63	16'60	-0'03	31. 30'33	30'40	+0'07
14	2. 20'42	20'28	-0'14				11				31. 29'36	30'60	+1'24
17	2. 19'37	19'72	+0'35	32. 33'07	33'20	+0'13	12	2. 16'66	16'36	-0'30	31. 31'35	30'60	-0'75
18	2. 19'75	19'52	-0'23	32. 30'70	33'20	+2'50	15				31. 33'36	30'80	-2'56
22	2. 18'94	18'70	-0'24	32. 30'75	32'40	+1'65	16	2. 15'96	15'82	-0'14	31. 29'83	31'00	+1'17
24	2. 18'59	18'26	-0'33	32. 30'84	31'80	+0'96	18	2. 15'54	15'52	-0'02	31. 32'36	31'20	-1'16
25	2. 18'12	18'04	-0'08	32. 30'60	31'60	+1'00	21	2. 15'35	15'06	-0'29	31. 31'73	31'60	-0'13
27	2. 17'53	17'58	+0'05	32. 33'17	31'00	-2'17	22	2. 14'95	14'90	-0'05	31. 32'04	31'80	-0'24
28	2. 17'32	17'36	+0'04	32. 32'56	30'80	-1'76	25	2. 14'40	14'42	+0'02	31. 32'84	32'40	-0'44
30				32. 27'80	30'20	+2'40	29	2. 14'01	13'74	-0'27	31. 36'40	33'20	-3'20
Feb. 4	2. 15'85	15'74	-0'11	32. 27'61	28'80	+1'19	Aug. 4	2. 12'65	12'68	+0'03	31. 37'00	34'80	-2'20
6	2. 15'30	15'28	-0'02	32. 30'00	28'20	-1'80	5	2. 12'35	12'52	+0'17	31. 42'43	35'00	-7'43
8	2. 15'11	14'82	-0'29	32. 27'31	27'40	+0'09	7				31. 35'71	35'60	-0'11
11	2. 14'03	14'16	+0'13	32. 25'58	26'40	+0'82	11	2. 11'54	11'52	-0'02	31. 36'08	37'00	+0'92
12	2. 13'93	13'94	+0'01	32. 24'69	26'00	+1'31	15	2. 11'08	10'88	-0'20	31. 40'16	38'40	-1'76
15	2. 13'13	13'30	+0'17	32. 23'67	24'80	+1'13	19	2. 10'56	10'28	-0'28	31. 42'36	39'80	-2'56
17	2. 12'90	12'90	0'00	32. 27'25	24'00	-3'25	20	2. 9'86	10'14	+0'28	31. 38'61	40'20	+1'59
22	2. 11'84	11'92	+0'08	32. 22'03	21'80	-0'23	21	2. 10'14	10'00	-0'14	31. 41'68	40'40	-1'28
Mar. 13	2. 9'61	9'34	-0'27	32. 13'63	12'40	-1'23	22				31. 42'36	40'80	-1'56
14	2. 9'31	9'26	-0'05	32. 11'03	11'80	+0'77	25	2. 9'88	9'48	-0'40	31. 42'35	42'20	-0'15
20	2. 8'78	8'90	+0'12	32. 7'92	8'60	+0'68	29	2. 9'01	9'02	+0'01	31. 43'55	43'80	+0'25
21	2. 8'65	8'86	+0'21	32. 9'30	8'00	-1'30	Sep. 1				31. 48'32	45'20	-3'12
29				32. 3'32	3'60	+0'28	9	2. 8'22	8'18	-0'04	31. 50'38	49'20	-1'18
April 1				32. 2'66	1'80	-0'86	10	2. 8'22	8'14	-0'08	31. 51'71	49'80	-1'91
5				31. 61'19	59'60	-1'59	11	2. 8'23	8'10	-0'13	31. 52'13	50'20	-1'93
8	2. 9'10	9'18	+0'08	31. 60'05	58'00	-2'05	12	2. 8'13	8'06	-0'07	31. 49'88	50'80	+0'92
19	2. 10'12	10'24	+0'12	31. 54'17	52'20	-1'97	16	2. 8'27	8'00	-0'27	31. 56'02	52'80	-3'22
23	2. 10'76	10'74	-0'02	31. 48'55	50'20	+1'65	17	2. 8'21	8'00	-0'21	31. 55'34	53'20	-2'14
24	2. 11'04	10'88	-0'16	31. 49'70	49'60	-0'10	22	2. 8'09	8'06	-0'03	31. 52'85	55'80	+2'95
29	2. 11'53	11'60	+0'07	31. 46'19	47'20	+1'01	23				31. 57'61	56'40	-1'21
May 5				31. 46'19	44'40	-1'79	24	2. 8'23	8'12	-0'11	31. 59'04	57'00	-2'04
9				31. 42'11	42'60	+0'49	Oct. 2	2. 8'78	8'66	-0'12	32. 1'27	1'40	+0'13
10	2. 13'24	13'36	+0'12	31. 40'38	42'20	+1'82	6				32. 4'83	3'60	-1'23
15	2. 14'44	14'18	-0'26	31. 43'14	40'20	-2'94	11	2. 9'84	9'70	-0'14	32. 7'98	6'40	-1'58
19				31. 38'70	38'60	-0'10	14				32. 5'59	8'00	+2'41
24	2. 15'79	15'58	-0'21	31. 39'55	36'80	-2'75	16	2. 10'66	10'48	-0'18	32. 10'43	9'20	-1'23
27				31. 34'00	35'80	+1'80	17				32. 8'08	9'60	+1'52
28	2. 16'37	16'14	-0'23	31. 37'79	35'60	-2'19	27	2. 12'64	12'58	-0'06	32. 17'19	15'00	-2'19
29				31. 32'91	35'20	+2'29	31				32. 21'02	17'00	-4'02
31				31. 35'87	34'60	-1'27	Nov. 1	2. 13'83	13'70	-0'13	32. 19'79	17'60	-2'19
June 2	2. 16'74	16'74	0'00	31. 34'71	34'20	-0'51	3	2. 13'88	14'16	+0'28	32. 18'75	18'60	-0'15
3	2. 16'88	16'84	-0'04	31. 34'81	34'00	-0'81	4	2. 14'64	14'38	-0'26	32. 19'78	19'00	-0'78
6	2. 16'97	17'14	+0'17	31. 35'22	33'20	-2'02	11	2. 16'10	16'06	-0'04	32. 23'18	22'40	-0'78
17				31. 33'16	31'20	-1'96	12	2. 16'62	16'30	-0'32	32. 23'33	22'80	-0'53
19	2. 17'80	17'78	-0'02				14	2. 16'96	16'76	-0'20	32. 24'45	23'60	-0'85
21	2. 18'02	17'80	-0'22	31. 32'02	30'80	-1'22	17	2. 17'70	17'46	-0'24	32. 24'69	24'80	+0'11
26	2. 17'60	17'70	+0'10	31. 30'15	30'20	+0'05	20	2. 18'28	18'16	-0'12	32. 26'58	26'00	-0'58
27	2. 18'08	17'66	-0'42	31. 31'71	30'20	-1'51	25	2. 19'47	19'24	-0'23	32. 31'26	27'80	-3'46
28	2. 17'88	17'62	-0'26	31. 30'85	30'20	-0'65	28	2. 20'08	19'84	-0'24	32. 31'35	28'80	-2'55
30	2. 17'53	17'50	-0'03	31. 31'91	30'20	-1'71	29	2. 20'26	20'04	-0'22	32. 31'57	29'20	-2'37
July 2	2. 17'37	17'36	-0'01	31. 31'38	30'00	-1'38	Dec. 4	2. 20'71	20'90	+0'19	32. 28'51	30'80	+2'29
3	2. 17'36	17'28	-0'08				8	2. 21'55	21'48	-0'07	32. 33'75	31'80	-1'95
5	2. 17'25	17'12	-0'13	31. 33'69	30'20	-3'49	11	2. 22'01	21'82	-0'19	32. 31'99	32'40	+0'41
							19	2. 22'31	22'38	+0'07	32. 36'64	33'60	-3'04

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1851.	" "	"	"	" "	"	"	1851.	" "	"	"	" "	"	"
Feb. 11				32. 9'99	8'14	- 1'85	Aug. 7				30. 32'13	25'86	- 6'27
15	2. 25'12	24'78	- 0'34	33. 40'06	29'40	- 10'66	11	2. 8'23	7'90	- 0'33	29. 38'14	33'94	- 4'20
16				33. 35'03	23'90	- 11'13	12				29. 31'12	27'82	- 3'30
Mar. 11				31. 57'99	53'80	- 4'19	Sep. 3				30. 46'65	40'88	- 5'77
Apr. 18				31. 23'36	19'26	- 4'10	9	2. 4'11	3'74	- 0'37	29. 29'14	23'42	- 5'72
May 14	2. 16'46	16'10	- 0'36				10				29. 32'86	26'18	- 6'68
15				31. 38'28	33'44	- 4'84	11						
June 13	2. 17'35	17'00	- 0'35	30. 58'46	49'64	- 8'82	Oct. 10				29. 43'11	40'76	- 2'35
14				30. 38'65	30'16	- 8'49	11				29. 53'28	51'34	- 1'94
July 10				30. 55'23	43'74	- 11'49	14				30. 46'21	37'84	- 8'37
12	2. 15'22	14'82	- 0'40	30. 18'40	11'10	- 7'30	15				30. 60'88	58'14	- 2'74
14				29. 51'59	44'94	- 6'65	16				31. 26'74	20'78	- 5'96
							Dec. 8	2. 18'34	18'22	- 0'12	31. 3'28	2'94	- 0'34
							10				31. 39'42	36'82	- 2'60

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of VENUS; and VERTICAL DIAMETERS of VENUS:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1851.	"	"	"	"	"	"
Jan. 8				49'87	48'60	- 1'27
17				44'59	42'00	- 2'59
22				43'19	38'40	- 4'79
29				35'96	34'60	- 1'36
Feb. 2				32'96	32'60	- 0'36
5				31'76	31'20	- 0'56
7				30'79	30'40	- 0'39
16				25'13	27'00	+ 1'87
23				26'04	23'20	- 2'84
Mar. 10				19'20	21'00	+ 1'80
Apr. 18				17'00	15'40	- 1'60
May 9				14'92	13'40	- 1'52
Nov. 12	0'48	0'68	+ 0'20			
25	0'76	0'72	- 0'04			
Dec. 11	0'80	0'76	- 0'04			

VERTICAL DIAMETER of MARS, compared with that of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1851. December 8	" 5'15	" 10'40	" + 5'25

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1851.	"	"	"	"	"	"	1851.	"	"	"	"	"	"
Jan. 5	2.65	2.42	-0.23	30.86	33.80	+2.94	April 12	3.03	3.00	-0.03	45.72	41.60	-4.12
8	2.87	2.46	-0.41	37.52	34.20	-3.32	19	2.91	3.00	+0.09	43.43	41.40	-2.03
15	2.59	2.50	-0.09	41.51	34.80	-6.71	22	3.26	3.00	-0.26	45.39	41.40	-3.99
17	2.46	2.52	+0.06	35.23	35.00	-0.23	25				45.44	41.20	-4.24
19	2.56	2.54	-0.02	36.00	35.20	-0.80	28	3.17	2.96	-0.21	45.00	41.00	-4.00
22	2.39	2.56	+0.17	37.88	35.60	-2.28	29	3.04	2.96	-0.08	42.95	41.00	-1.95
23	2.69	2.56	-0.13	39.31	35.60	-3.71							
29				40.51	36.40	-4.11	May 4	2.83	2.92	+0.09	42.95	40.60	-2.35
							8	2.88	2.92	+0.04	42.41	40.40	-2.01
Feb. 2	2.54	2.66	+0.12	37.77	37.00	-0.77	9	3.18	2.92	-0.26	42.21	40.40	-1.81
3	3.14	2.66	-0.48	36.72	37.00	+0.28	10	3.08	2.90	-0.18	43.55	40.20	-3.35
10	2.80	2.72	-0.08	38.98	37.60	-1.38	14	2.91	2.86	-0.05	42.43	39.80	-2.63
16	3.16	2.76	-0.40	41.15	38.40	-2.75	15	2.71	2.86	+0.15	41.72	39.80	-1.92
							17	2.62	2.86	+0.24	44.44	39.60	-4.84
Mar. 13	3.03	2.94	-0.09	46.16	40.60	-5.56	19	2.78	2.84	+0.06	39.99	39.60	-0.39
26	2.96	3.00	+0.04	45.63	41.40	-4.23	20				43.67	39.40	-4.27
29	3.13	3.00	-0.13	43.07	41.40	-1.67	22	2.73	2.82	+0.09	42.25	39.20	-3.05
							23	3.10	2.82	-0.28	44.47	39.20	-5.27
April 4	2.62	3.00	+0.38	49.42	41.60	-7.82	29	2.97	2.78	-0.19	39.13	38.60	-0.53
5	3.03	3.00	-0.03	44.72	41.60	-3.12	31	2.80	2.76	-0.04	39.58	38.40	-1.18

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN; and VERTICAL DIAMETERS of SATURN :
compared with those of the Nautical Almanac.

Jan. 9	1.36	1.16	-0.20	17.46	16.20	-1.26	Nov. 14	1.11	1.32	+0.21	21.52	18.00	-3.52
Sep. 9	1.54	1.28	-0.26	18.76	17.60	-1.16	17	1.43	1.32	-0.11	19.71	18.00	-1.71
13	1.38	1.28	-0.10	19.36	17.60	-1.76	18	1.13	1.32	+0.19	19.62	18.00	-1.62
27	1.50	1.32	-0.18	21.82	18.00	-3.82	21				20.52	18.00	-2.52
							22	1.14	1.32	+0.18	19.85	18.00	-1.85
Oct. 4	1.52	1.32	-0.20				24	1.11	1.32	+0.21	20.87	18.00	-2.87
8	1.64	1.32	-0.32				25	1.52	1.30	-0.22	20.80	17.80	-3.00
27	1.40	1.32	-0.08	18.90	18.20	-0.70							
Nov. 1	1.31	1.32	+0.01	21.81	18.20	-3.61	Dec. 2	1.56	1.30	-0.26	19.38	17.80	-1.58
4	1.82	1.32	-0.50	19.92	18.20	-1.72	8	1.53	1.28	-0.25	19.27	17.60	-1.67
7	1.16	1.32	+0.16	20.84	18.20	-2.64	11	1.19	1.28	+0.09	20.38	17.40	-2.98
12	1.21	1.32	+0.11				26	1.70	1.26	-0.44	18.02	17.00	-1.02
							30	1.12	1.24	+0.12	17.96	16.80	-1.16

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	o ' "	"	"
Jan. 6. 0. 6. 2.5	19. 7. 56.08	55.72	- 0.36	112. 32. 17.09	18.80	+ 1.71
9. 0. 7. 19.8	19. 21. 3.30	3.01	- 0.29	112. 8. 60.50	59.50	- 1.00
14. 0. 9. 17.2	19. 42. 43.75	43.52	- 0.23	111. 21. 29.18	30.80	+ 1.62
17. 0. 10. 19.5	19. 55. 35.93	35.94	+ 0.01	110. 47. 55.73	63.80	(+ 8.07)
18. 0. 10. 39.4	19. 59. 52.43	52.02	- 0.41	110. 36. 6.45	7.00	+ 0.55

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—*continued.*

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
Jan. 22. 0. 11. 49.9	20. 16. 49.31	48.98	— 0.33	109. 44. 27.47	29.50	+ 2.03
24. 0. 12. 20.4	20. 25. 13.06	12.96	— 0.10	109. 16. 25.54	27.30	+ 1.76
25. 0. 12. 34.8	20. 29. 24.03	23.78	— 0.25	109. 1. 53.66	54.10	+ 0.44
27. 0. 13. 1.0	20. 37. 43.44	43.07	— 0.37	108. 31. 43.33	45.40	+ 2.07
28. 0. 13. 12.5	20. 41. 51.48	51.52	+ 0.04	108. 16. 7.94	10.60	+ 2.66
30. 0. 13. 34.1	20. 50. 6.32	6.00	— 0.32	107. 44. 1.74	2.20	+ 0.46
Feb. 4. 0. 14. 13.0	21. 10. 28.05	27.83	— 0.22	106. 18. 16.24	17.00	+ 0.76
6. 0. 14. 22.9	21. 18. 31.10	30.74	— 0.36	105. 41. 57.68	58.00	+ 0.32
8. 0. 14. 29.3	21. 26. 30.66	30.33	— 0.33	105. 4. 33.68	34.90	+ 1.22
11. 0. 14. 32.9	21. 38. 23.94	23.61	— 0.33	104. 6. 37.28	37.80	+ 0.52
12. 0. 14. 32.4	21. 42. 20.00	19.77	— 0.23	103. 46. 49.63	50.40	+ 0.77
15. 0. 14. 26.7	21. 54. 3.94	3.64	— 0.30	102. 46. 9.18	8.80	— 0.38
17. 0. 14. 19.1	22. 1. 49.38	49.19	— 0.19	102. 4. 41.20	39.00	— 2.20
21. 0. 13. 55.7	22. 17. 12.14	12.01	— 0.13	.....	...	...
22. 0. 13. 48.5	22. 21. 1.46	1.10	— 0.36	100. 17. 38.79	40.60	+ 1.81
Mar. 13. 0. 9. 47.5	23. 31. 54.35	53.96	— 0.39	93. 2. 12.41	16.70	+ 4.29
14. 0. 9. 30.8	23. 35. 34.06	33.69	— 0.37	92. 38. 38.67	39.30	+ 0.63
20. 0. 7. 45.2	23. 57. 27.59	27.18	— 0.41	90. 16. 33.29	34.10	+ 0.81
21. 0. 7. 27.0	0. 1. 5.82	5.51	— 0.31	89. 52. 52.46	53.00	+ 0.54
29. 0. 4. 59.6	0. 30. 10.48	10.20	— 0.28	86. 44. 24.89	24.50	— 0.39
Apr. 1. 0. 4. 4.7	0. 41. 5.02	4.83	— 0.19	85. 34. 33.53	34.60	+ 1.07
4. 0. 3. 10.8	.....	...	...	84. 25. 27.70	27.70	0.00
5. 0. 2. 53.0	0. 55. 39.37	39.16	— 0.21	84. 2. 35.56	36.70	+ 1.14
8. 0. 2. 0.9	1. 6. 36.77	36.57	— 0.20	82. 54. 41.27	42.40	+ 1.13
16. 23. 59. 38.0	1. 39. 42.49	42.36	— 0.13	.....	...	...
18. 23. 59. 10.2	1. 47. 7.74	7.38	— 0.36	78. 56. 11.20	13.20	+ 2.00
22. 23. 58. 19.2	2. 2. 2.77	2.59	— 0.18	77. 34. 32.67	33.00	+ 0.33
23. 23. 58. 7.6	2. 5. 47.67	47.55	— 0.12	77. 14. 37.66	37.40	— 0.26
28. 23. 57. 17.5	2. 24. 40.28	39.87	— 0.41	75. 38. 11.45	12.70	+ 1.25
May 4. 23. 56. 34.2	2. 47. 36.11	36.02	— 0.09	73. 50. 20.33	20.00	— 0.33
8. 23. 56. 16.4	3. 3. 4.55	4.33	— 0.22	72. 43. 41.66	42.40	+ 0.74
9. 23. 56. 13.3	3. 6. 57.96	57.78	— 0.18	72. 27. 46.39	45.60	— 0.79
14. 23. 56. 6.4	3. 26. 33.78	33.54	— 0.24	71. 12. 31.78	31.60	— 0.18
15. 23. 56. 6.7	3. 30. 30.63	30.40	— 0.23	70. 58. 30.32	24.70	— 5.62
18. 23. 56. 11.1	3. 42. 24.77	24.41	— 0.36	70. 18. 1.49	0.70	— 0.79
23. 23. 56. 29.6	4. 2. 26.07	25.74	— 0.33	69. 17. 24.17	24.00	— 0.17
26. 23. 56. 47.1	4. 14. 33.27	33.00	— 0.27	68. 45. 14.14	14.70	+ 0.56
27. 23. 56. 53.6	4. 18. 36.40	36.43	+ 0.03	68. 35. 16.27	15.10	— 1.17
28. 23. 57. 1.0	4. 22. 40.31	40.33	+ 0.02	68. 25. 38.30	37.70	— 0.60
30. 23. 57. 17.2	4. 30. 49.74	49.50	— 0.24	68. 7. 27.27	30.20	+ 2.93
June 1. 23. 57. 34.9	4. 39. 0.55	0.35	— 0.20	67. 50. 54.72	53.80	— 0.92
2. 23. 57. 44.0	4. 43. 6.30	6.36	+ 0.06	67. 43. 8.49	10.30	+ 1.81
5. 23. 58. 14.8	4. 55. 26.78	26.47	— 0.31	67. 22. 20.82	20.40	— 0.42
17. 0. 0. 24.7	5. 40. 59.17	59.53	(+ 0.36)	66. 30. 52.43	52.80	+ 0.37
19. 0. 0. 50.9	5. 49. 18.63	18.43	— 0.20	66. 33. 55.13	56.00	+ 0.87
21. 0. 1. 16.9	5. 57. 37.76	37.55	— 0.21	66. 32. 37.44	38.20	+ 0.76
26. 0. 2. 21.4	6. 18. 25.27	25.05	— 0.22	66. 36. 38.75	37.30	— 1.45
27. 0. 2. 33.7	6. 22. 34.12	34.29	+ 0.17	66. 38. 41.41	39.30	— 2.11
28. 0. 2. 46.6	6. 26. 43.59	43.39	— 0.20	66. 41. 6.86	5.90	— 0.96
30. 0. 3. 11.0	6. 35. 1.20	1.05	— 0.15	66. 47. 12.84	12.70	— 0.14
July 2. 0. 3. 35.0	6. 43. 18.36	17.79	— 0.57	66. 54. 59.29	57.20	— 2.09
3. 0. 3. 46.0	6. 47. 25.95	25.75	— 0.20	66. 59. 28.03	25.80	— 2.23

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER—*continued.*

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
July 5. o. 4. 7.8	6.55.40.97	40.74	— 0.23	67. 9.37.15	35.20	— 1.95
7. o. 4. 28.3	7. 3.54.59	54.34	— 0.25	67.21.21.17	20.00	— 1.17
10. o. 4. 56.0	7.16.12.09	11.80	— 0.29	67.41.54.47	53.30	— 1.17
11. o. 5. 4.5	7.20.17.12	16.77	— 0.35	67.49.32.36	30.70	— 1.66
12. o. 5. 13.0	7.24.22.19	21.31	— 0.88	67.57.31.10	31.00	— 0.10
15. o. 5.33.2	.....	....	....	68.23.49.99	47.40	— 2.59
16. o. 5.40.0	7.40.35.49	34.77	— 0.72	68.33.18.32	17.30	— 1.02
18. o. 5.50.3	7.48.38.93	38.56	— 0.37	68.53.24.58	22.60	— 1.98
21. o. 6. 2.3	8. 0.40.66	40.40	— 0.26	69.26. 7.35	10.90	+ 3.55
22. o. 6. 5.1	8. 4.40.01	39.94	— 0.07	69.37.50.00	48.80	— 1.20
25. o. 6.10.6	.....	....	....	70.14.46.00	44.90	— 1.10
26. o. 6.11.6	8.20.32.76	32.53	— 0.23	.....	....	....
28. o. 6.11.2	8.28.25.48	25.36	— 0.12	.....	....	....
29. o. 6.10.6	8.32.21.47	20.87	— 0.60	71. 8.37.28	35.10	— 2.18
30. o. 6. 8.5	8.36.15.89	15.79	— 0.10	71.22.52.31	50.00	— 2.31
31. o. 6. 6.3	8.40.10.27	10.08	— 0.19	.....	....	....
Aug. 4. o. 5.50.9	8.55.41.05	41.06	+ 0.01	72.38.35.64	33.90	— 1.74
5. o. 5.45.8	8.59.32.45	32.25	— 0.20	72.54.37.77	34.50	— 3.27
7. o. 5.33.3	9. 7.13.03	12.77	— 0.26	73.27.27.69	25.10	— 2.59
8. o. 5.25.8	9.11. 2.03	2.11	+ 0.08	73.44.15.90	14.40	— 1.50
11. o. 5. 0.8	9.22.26.69	26.59	— 0.10	74.36.15.99	15.40	— 0.59
12. o. 4.51.5	9.26.13.92	13.59	— 0.33	.....	....	....
15. o. 4.19.3	9.37.31.23	31.30	+ 0.07	75.49. 3.79	2.00	— 1.79
16. o. 4. 8.0	9.41.16.47	16.15	— 0.32	76. 7.50.81	48.30	— 2.51
19. o. 3.29.9	9.52.27.99	27.68	— 0.31	77. 5.27.40	25.70	— 1.70
20. o. 3.16.2	9.56.10.73	10.56	— 0.17	77.25. 5.34	3.40	— 1.94
21. o. 3. 2.1	9.59.53.20	52.99	— 0.21	77.44.55.47	53.20	— 2.27
22. o. 2.47.5	10. 3.35.06	34.97	— 0.09	78. 4.56.07	54.60	— 1.47
25. o. 2. 1.6	10.14.38.72	38.31	— 0.41	79. 6. 8.05	6.20	— 1.85
29. o. 0.54.0	10.29.17.20	17.10	— 0.10	80.30. 8.83	6.20	— 2.63
31.23.59.59.9	10.40.12.57	12.36	— 0.21	81.34.45.10	42.70	— 2.40
Sep. 5.23.58.23.4	10.58.18.60	18.27	— 0.33	.....	....	....
8.23.57.22.3	11. 9. 6.98	6.92	— 0.06	84.32.31.37	30.40	— 0.97
9.23.57. 1.8	11.12.42.95	42.77	— 0.18	84.55.14.63	11.80	— 2.83
10.23.56.40.9	11.16.18.55	18.49	— 0.06	85.17.59.87	58.40	— 1.47
11.23.56.20.3	11.19.54.45	54.09	— 0.36	85.40.50.23	49.90	— 0.33
12.23.55.59.2	11.23.29.82	29.60	— 0.22	.....	....	....
15.23.54.56.0	11.34.16.15	15.77	— 0.38	87.12.59.82	58.20	— 1.62
16.23.54.34.6	11.37.51.22	51.12	— 0.10	87.36. 9.30	9.30	— 0.00
21.23.52.49.4	11.55.48.55	48.52	— 0.03	89.32.44.65	43.00	— 1.65
22.23.52.28.6	11.59.24.19	24.24	+ 0.05	89.56. 8.47	7.00	— 1.47
23.23.52. 8.2	12. 3. 0.32	0.10	— 0.22	90.19.33.76	31.90	— 1.86
Oct. 1.23.49.29.7	12.31.53.81	53.54	— 0.27	93.26.42.73	40.20	— 2.53
3.23.48.52.4	12.39. 9.52	9.38	— 0.14	.....	....	....
5.23.48.16.4	.....	....	....	94.59.28.96	28.80	— 0.16
7.23.47.42.5	12.53.45.56	45.16	— 0.40	.....	....	....
10.23.46.53.9	13. 4.46.52	46.32	— 0.20	96.53.57.97	60.90	+ 2.93
12.23.46.23.6	13.12. 9.28	9.48	(+ 0.20)	.....	....	....
13.23.46. 9.6	13.15.51.78	51.85	+ 0.07	98. 1.40.42	40.10	— 0.32
15.23.45.43.4	13.23.18.56	18.26	— 0.30	98.46.14.52	13.70	— 0.82
16.23.45.30.8	13.27. 2.50	2.33	— 0.17	99. 8.19.22	19.60	+ 0.38
26.23.44. 2.2	14. 4.59.25	59.06	— 0.19	102.41. 7.37	6.80	— 0.57
30.23.43.46.6	14.20.29.75	29.70	— 0.05	104. 1. 8.37	5.40	— 2.97
31.23.43.44.8	14.24.24.57	24.26	— 0.31	104.20.33.48	32.20	— 1.28

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. ^d ^h ^m ^s	^h ^m ^s	^s	^s	[°] ['] ["]	["]	["]
Nov. 2. 23. 43. 43 ^o	14. 32. 15 ⁸²	15 ⁷⁴	— 0 ⁰⁸	104. 58. 44 ⁵¹	43 ⁷⁰	— 0 ⁸¹
3. 23. 43. 43 ⁴	14. 36. 12 ⁷⁸	12 ⁶⁷	— 0 ¹¹	105. 17. 31 ⁸²	27 ⁵⁰	— 4 ³²
9. 23. 44. 3 ^o	15. 0. 11 ⁷³	11 ⁵³	— 0 ²⁰	107. 4. 17 ⁸⁰	18 ¹⁰	+ 0 ³⁰
10. 23. 44. 9 ^o	15. 4. 14 ²⁹	14 ³⁰	+ 0 ⁰¹	107. 21. 9 ²⁷	7 ⁶⁰	— 1 ⁶⁷
11. 23. 44. 16 ^o	15. 8. 17 ⁸⁸	17 ⁹²	+ 0 ⁰⁴	107. 37. 41 ⁰⁷	39 ²⁰	— 1 ⁸⁷
13. 23. 44. 32 ⁸	15. 16. 27 ⁸³	27 ⁷⁸	— 0 ⁰⁵	108. 9. 47 ²³	47 ³⁰	+ 0 ⁰⁷
16. 23. 45. 4 ⁴	15. 28. 49 ¹⁸	49 ⁰⁸	— 0 ¹⁰	108. 55. 36 ⁰⁷	35 ⁹⁰	— 0 ¹⁷
18. 23. 45. 29 ⁸	15. 37. 7 ⁷⁸	7 ⁵⁶	— 0 ²²	.....	.....	.....
19. 23. 45. 43 ⁵	15. 41. 18 ⁰⁹	18 ⁰⁶	— 0 ⁰³	109. 38. 22 ⁸³	22 ⁸⁰	— 0 ⁰³
24. 23. 47. 5 ³	16. 2. 22 ⁸⁸	22 ⁷⁶	— 0 ¹²	110. 42. 29 ⁵³	29 ³⁰	— 0 ²³
27. 23. 48. 3 ⁴	16. 15. 10 ⁸⁵	10 ⁷²	— 0 ¹³	111. 16. 22 ⁶⁸	21 ⁹⁰	— 0 ⁷⁸
28. 23. 48. 24 ¹	16. 19. 28 ¹⁸	28 ¹²	— 0 ⁰⁶	111. 26. 51 ⁵⁸	51 ⁵⁰	— 0 ⁰⁸
Dec. 3. 23. 50. 17 ⁶	16. 41. 4 ⁷³	4 ⁷⁷	+ 0 ⁰⁴	112. 13. 6 ⁸⁴	5 ⁷⁰	— 1 ¹⁴
7. 23. 51. 59 ^o	16. 58. 32 ⁶⁸	32 ⁴⁴	— 0 ²⁴	112. 42. 20 ⁹⁴	20 ⁸⁰	— 0 ¹⁴
10. 23. 53. 19 ⁷	17. 11. 43 ²³	43 ²⁸	+ 0 ⁰⁵	112. 59. 37 ²⁷	36 ⁸⁰	— 0 ⁴⁷
18. 23. 57. 11 ^o	17. 47. 7 ⁶⁶	7 ⁶⁷	+ 0 ⁰¹	113. 25. 28 ⁸⁷	28 ⁵⁰	— 0 ³⁷

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER.

Jan. 8. 4. 40. 18 ¹	23. 50. 49 ⁸²	49 ⁷⁹	— 0 ⁰³	95. 25. 6 ¹⁷	7 ⁶⁰	+ 1 ⁴³
9. 5. 22. 43 ¹	0. 37. 18 ³⁹	18 ⁴²	+ 0 ⁰³	91. 4. 42 ²³	43 ⁴⁰	+ 1 ¹⁷
18. 13. 30. 38 ⁶	9. 22. 3 ⁰⁶	4 ⁴⁴	+ 1 ³⁸	73. 23. 53 ¹⁸	49 ⁹⁰	— 3 ²⁸
21. 16. 17. 18 ⁵	12. 20. 59 ⁹⁸	60 ⁸⁸	+ 0 ⁹⁰	87. 21. 39 ²²	38 ³⁰	— 0 ⁹²
22. 17. 7. 38 ⁶	13. 15. 24 ⁹⁵	26 ¹⁸	+ 1 ²³	92. 30. 46 ³⁷	48 ⁶⁰	+ 2 ²³
23. 17. 56. 41 ⁵	14. 8. 32 ⁴¹	33 ⁴⁷	+ 1 ⁰⁶	.....	.....	.....
24. 18. 45. 14 ⁸	15. 1. 10 ²⁵	11 ⁰⁵	+ 0 ⁸⁰	101. 42. 41 ³⁹	43 ⁰⁰	+ 1 ⁶¹
26. 20. 23. 0 ⁸	16. 47. 5 ⁴⁰	5 ⁵⁰	+ 0 ¹⁰	108. 7. 51 ²¹	60 ¹⁰	+ 8 ⁸⁹
Feb. 8. 5. 31. 15 ⁴	2. 44. 8 ⁷⁵	8 ⁶⁸	— 0 ⁰⁷	79. 36. 12 ⁶¹	13 ⁵⁰	+ 0 ⁸⁹
10. 7. 10. 44 ⁴	4. 31. 47 ²⁴	47 ²⁶	+ 0 ⁰²	72. 33. 7 ¹⁹	2 ³⁰	— 4 ⁸⁹
11. 8. 6. 6 ⁷	5. 31. 15 ¹²	15 ⁵⁸	+ 0 ⁴⁶	70. 16. 5 ⁰⁵	4 ⁰⁰	— 1 ⁰⁵
13. 10. 6. 23 ⁴	7. 39. 44 ⁷³	45 ⁹⁶	+ 1 ²³	69. 39. 26 ⁶⁸	25 ⁶⁰	— 1 ⁰⁸
14. 11. 8. 22 ⁴	8. 45. 50 ⁴⁴	51 ⁵⁸	+ 1 ¹⁴	71. 39. 32 ⁷²	33 ³⁰	+ 0 ⁵⁸
15. 12. 9. 11 ⁶	9. 50. 46 ²⁰	47 ⁵⁹	+ 1 ³⁹	75. 5. 34 ⁹¹	33 ⁶⁰	— 1 ³¹
16. 13. 7. 40 ⁷	10. 53. 21 ⁴⁸	22 ⁷⁷	+ 1 ²⁹	79. 37. 27 ⁹⁹	30 ²⁰	+ 2 ²¹
21. 17. 29. 9 ²	15. 35. 15 ⁶⁸	15 ⁸⁵	+ 0 ¹⁷	104. 13. 12 ⁰²	12 ¹⁰	+ 0 ⁰⁸
22. 18. 19. 9 ⁶	16. 29. 20 ⁸⁹	21 ¹⁴	+ 0 ²⁵	107. 22. 26 ³⁶	27 ¹⁰	+ 0 ⁷⁴
Mar. 11. 6. 51. 57 ³	6. 7. 17 ⁰⁶	17 ²⁴	+ 0 ¹⁸	69. 21. 19 ²⁶	20 ⁰⁰	+ 0 ⁷⁴
13. 8. 49. 41 ³	8. 13. 13 ⁵⁰	14 ⁵¹	+ 1 ⁰¹	70. 22. 46 ⁹¹	46 ³⁰	— 0 ⁶¹
14. 9. 49. 24 ⁷	9. 17. 3 ²⁴	3 ⁹⁰	+ 0 ⁶⁶	73. 4. 13 ¹¹	11 ⁷⁰	— 1 ⁴¹
16. 11. 44. 53 ²	11. 20. 43 ⁸²	44 ⁷⁶	+ 0 ⁹⁴	81. 56. 12 ⁵¹	12 ²⁰	— 0 ³¹
18. 13. 33. 30 ⁰	13. 17. 31 ⁵⁴	32 ⁴⁵	+ 0 ⁹¹	92. 52. 32 ⁷³	29 ²⁰	— 3 ⁵³
19. 14. 26. 6 ⁶	.....	.....	.....	98. 4. 35 ²⁸	33 ⁸⁰	— 1 ⁴⁸
20. 15. 18. 13 ²	15. 10. 25 ¹¹	25 ²⁹	+ 0 ¹⁸	102. 38. 39 ⁰⁷	35 ⁷⁰	— 3 ³⁷
April 9. 6. 40. 2 ⁸	7. 49. 40 ⁶³	41 ⁴⁷	+ 0 ⁸⁴	69. 31. 31 ⁶⁸	29 ⁵⁰	— 2 ¹⁸
10. 7. 37. 44 ⁹	8. 51. 28 ⁷⁶	29 ⁵⁰	+ 0 ⁷⁴	71. 37. 8 ⁰⁹	6 ³⁰	— 1 ⁷⁹
12. 9. 30. 20 ⁹	10. 52. 16 ³⁸	17 ²¹	+ 0 ⁸³	79. 25. 5 ⁵¹	2 ⁷⁰	— 2 ⁸¹
13. 10. 24. 39 ⁰	11. 50. 39 ⁹⁹	40 ⁶⁰	+ 0 ⁶¹	84. 33. 62 ¹⁶	59 ⁵⁰	— 2 ⁶⁶
14. 11. 17. 55 ⁰	12. 48. 1 ²⁷	2 ⁰⁶	+ 0 ⁷⁹	90. 3. 43 ⁹²	39 ⁷⁰	— 4 ²²
17. 13. 56. 17 ⁷	15. 38. 39 ⁶²	40 ⁰⁵	+ 0 ⁴³	104. 48. 26 ⁷²	23 ⁷⁰	— 3 ⁰²
18. 14. 49. 26 ⁸	16. 35. 53 ⁹⁷	54 ⁴⁸	+ 0 ⁵¹	108. 5. 55 ⁵⁴	54 ⁶⁰	— 0 ⁹⁴
20. 16. 34. 48 ¹	18. 29. 25 ⁷²	25 ⁹⁷	+ 0 ²⁵	111. 13. 33 ⁴⁴	33 ³⁰	— 0 ¹⁴

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER—*continued*.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	o ' "	"	"
May 8. 6. 28. 58.6	9. 32. 54.63	55.52	+ 0.89	73. 31. 19.08	15.90	— 3.18
10. 8. 16. 29.3	11. 28. 36.12	37.07	+ 0.95	82. 21. 9.41	6.30	— 3.11
12. 9. 59. 33.3	.....	...	...	93. 3. 11.37	12.40	+ 1.03
13. 10. 50. 58.9	14. 15. 20.77	21.18	+ 0.41	98. 15. 36.92	36.90	— 0.02
14. 11. 43. 3.6	15. 11. 30.55	30.99	+ 0.44	102. 55. 35.35	36.60	+ 1.25
15. 12. 35. 58.4	16. 8. 30.68	31.35	+ 0.67	106. 45. 38.77	38.30	— 0.47
19. 16. 6. 39.2	19. 55. 32.27	32.72	+ 0.45	110. 41. 20.19	23.60	+ 3.41
22. 18. 26. 38.6	22. 27. 44.32	44.63	+ 0.31	102. 52. 8.74	12.80	+ 4.06
23. 19. 9. 44.0	23. 14. 53.41	53.54	+ 0.13	98. 59. 12.55	11.00	— 1.55
25. 20. 34. 21.0	0. 47. 37.42	37.30	— 0.12	.....	...	...
26. 21. 17. 32.3	1. 34. 52.32	51.65	— 0.67	.....	...	...
June 8. 7. 54. 51.0	.....	...	...	91. 4. 13.55	12.80	— 0.75
13. 12. 12. 4.6	17. 38. 53.05	53.67	+ 0.62	110. 38. 8.60	8.70	+ 0.10
14. 13. 5. 10.5	18. 36. 4.23	4.83	+ 0.60	111. 33. 27.53	30.70	+ 3.17
16. 14. 47. 30.9	20. 26. 34.58	34.94	+ 0.36	109. 53. 52.26	53.50	+ 1.24
17. 15. 35. 29.2	21. 18. 37.34	37.59	+ 0.25	107. 34. 3.47	4.90	+ 1.43
18. 16. 21. 9.6	22. 8. 21.76	21.95	+ 0.19	104. 28. 11.92	11.00	— 0.92
20. 17. 47. 17.2	23. 42. 36.62	36.94	+ 0.32	96. 39. 11.68	13.90	+ 2.22
22. 19. 11. 19.9	1. 14. 46.27	46.48	+ 0.21	87. 40. 33.21	33.80	+ 0.59
July 3. 4. 9. 28.8	10. 53. 49.09	50.50	+ 1.41	78. 59. 4.22	6.30	+ 2.08
7. 7. 32. 0.3	14. 32. 40.12	40.40	+ 0.28	99. 35. 7.10	7.70	+ 0.60
10. 10. 5. 8.1	17. 18. 2.75	3.03	+ 0.28	109. 58. 3.73	6.20	+ 2.47
12. 11. 49. 37.0	19. 10. 41.89	42.41	+ 0.52	111. 32. 4.18	6.40	+ 2.22
14. 13. 29. 19.8	20. 58. 34.18	34.67	+ 0.49	108. 37. 9.03	6.90	— 2.13
15. 14. 16. 0.0	21. 49. 18.63	18.87	+ 0.24	105. 48. 6.29	6.30	+ 0.01
17. 15. 43. 22.3	23. 24. 48.43	48.42	— 0.01	98. 20. 49.55	51.80	+ 2.25
18. 16. 25. 8.8	0. 10. 38.34	38.54	+ 0.20	94. 2. 53.01	51.20	— 1.81
20. 17. 48. 49.5	1. 42. 25.92	26.31	+ 0.39	85. 2. 41.19	38.60	— 2.59
21. 18. 32. 33.9	2. 30. 14.05	14.64	+ 0.59	80. 38. 30.26	25.60	— 4.66
Aug. 3. 5. 29. 10.5	14. 15. 57.19	58.02	+ 0.83	98. 6. 9.90	13.00	+ 3.10
5. 7. 10. 14.2	16. 5. 10.60	11.17	+ 0.57	106. 29. 32.79	33.50	+ 0.71
7. 8. 53. 22.6	17. 56. 29.00	28.87	— 0.13	111. 2. 15.52	16.20	+ 0.68
8. 9. 44. 59.6	18. 52. 11.07	11.25	+ 0.18	111. 36. 14.50	15.50	+ 1.00
11. 12. 12. 9.3	21. 31. 34.61	35.10	+ 0.49	106. 52. 3.61	2.30	— 1.31
12. 12. 57. 19.9	22. 20. 49.22	49.59	+ 0.37	103. 35. 46.81	44.00	— 2.81
13. 13. 40. 41.8	23. 8. 14.63	15.14	+ 0.51	99. 46. 7.81	6.40	— 1.41
15. 15. 4. 6.9	0. 39. 46.67	47.05	+ 0.38	91. 7. 44.02	42.00	— 2.02
18. 17. 12. 18.1	3. 0. 8.59	8.98	+ 0.39	78. 2. 39.97	36.30	— 3.67
20. 18. 49. 35.2	4. 45. 34.82	35.67	+ 0.85	71. 16. 59.96	52.70	— 7.26
31. 4. 13. 25.5	14. 50. 23.29	24.76	+ 1.47	101. 13. 24.78	27.70	+ 2.92
Sep. 3. 6. 49. 49.9	17. 39. 2.97	3.50	+ 0.53	110. 44. 28.25	28.80	+ 0.55
8. 10. 55. 15.3	22. 4. 51.49	51.68	+ 0.19	104. 44. 43.15	44.30	+ 1.15
9. 11. 39. 1.7	22. 52. 41.68	42.17	+ 0.49	101. 3. 35.66	35.20	— 0.46
10. 12. 21. 24.7	23. 39. 8.10	8.77	+ 0.67	96. 55. 39.95	36.90	— 3.05
11. 13. 2. 58.0	0. 24. 44.78	45.24	+ 0.46	92. 30. 58.66	54.30	— 4.36
12. 13. 44. 20.6	1. 10. 10.72	11.61	+ 0.89	87. 59. 17.09	12.90	— 4.19
13. 14. 26. 17.5	1. 56. 11.08	11.93	+ 0.85	83. 30. 21.26	16.40	— 4.86
14. 15. 9. 34.2	2. 43. 31.43	32.11	+ 0.68	79. 14. 16.82	13.00	— 3.82
15. 15. 54. 55.7	3. 32. 57.01	57.25	+ 0.24	75. 22. 10.92	7.90	— 3.02
17. 17. 34. 13.3	5. 20. 23.98	24.57	+ 0.59	69. 41. 30.20	24.60	— 5.60
30. 4. 42. 33.4	17. 17. 52.51	53.80	+ 1.29	110. 19. 15.75	15.80	+ 0.05
Oct. 2. 6. 28. 18.1	19. 11. 47.72	48.33	+ 0.61	111. 50. 4.42	4.50	+ 0.08
3. 7. 18. 47.8	20. 6. 22.23	22.50	+ 0.27	110. 49. 31.41	34.10	+ 2.69

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
Oct. 4. 8. 7. 8.4	20. 58. 47.34	47.69	+ 0.35	108. 48. 34.13	37.10	+ 2.97
5. 8. 53. 17.6	21. 49. 0.64	0.92	+ 0.28	105. 57. 0.22	2.30	+ 2.08
8. 11. 1. 52.7	0. 9. 46.54	47.20	+ 0.66	93. 59. 19.87	20.50	+ 0.63
10. 12. 25. 12.5	1. 41. 13.18	14.52	+ 1.34	84. 50. 6.27	0.90	— 5.37
11. 13. 8. 13.9	2. 28. 18.14	19.34	+ 1.20	80. 24. 34.40	28.60	— 5.80
14. 15. 30. 10.1	5. 2. 27.39	28.19	+ 0.80	70. 6. 37.96	32.20	— 5.76
15. 16. 22. 47.5	5. 59. 9.93	10.23	+ 0.30	68. 24. 34.37	30.10	— 4.27
16. 17. 17. 39.2	6. 58. 7.22	7.89	+ 0.67	67. 55. 38.15	35.80	— 2.35
17. 18. 13. 54.6	7. 58. 28.43	29.77	+ 1.34	68. 47. 64.33	59.00	— 5.33
18. 19. 10. 33.5	8. 59. 13.12	14.13	+ 1.01	71. 3. 44.98	40.90	— 4.08
30. 5. 11. 54.6	19. 45. 35.08	35.67	+ 0.59	111. 36. 48.21	52.10	+ 3.89
Nov. 1. 6. 49. 35.6	21. 31. 25.27	25.55	+ 0.28	107. 18. 14.27	19.00	+ 4.73
2. 7. 34. 39.9	22. 20. 33.51	33.94	+ 0.43	103. 56. 54.99	60.20	+ 5.21
3. 8. 17. 48.7	23. 7. 46.03	46.48	+ 0.45	100. 1. 57.23	60.70	+ 3.47
4. 8. 59. 42.4	23. 53. 43.09	43.72	+ 0.63	95. 42. 56.57	58.70	+ 2.13
6. 10. 22. 47.7	1. 24. 55.17	55.73	+ 0.56	86. 29. 36.05	33.30	— 2.75
7. 11. 5. 33.1	2. 11. 44.18	44.79	+ 0.61	81. 54. 45.95	42.80	— 3.15
14. 17. 5. 24.1	8. 40. 10.13	11.06	+ 0.93	69. 56. 49.37	46.10	— 3.27
15. 18. 0. 26.2	9. 39. 17.83	18.64	+ 0.81	73. 2. 4.86	1.10	— 3.76
16. 18. 54. 10.0	10. 37. 7.07	8.31	+ 1.24	77. 12. 64.21	59.50	— 4.71
17. 19. 46. 41.4	11. 33. 43.63	45.13	+ 1.50	82. 14. 8.59	6.80	— 1.79
29. 5. 29. 16.1	22. 1. 16.10	15.89	— 0.21	105. 36. 10.43	15.10	+ 4.67
30. 6. 13. 30.6	22. 49. 34.47	34.63	+ 0.16	101. 50. 56.38	59.80	+ 3.42
Dec. 2. 7. 37. 17.7	0. 21. 28.42	28.75	+ 0.33	93. 8. 34.63	36.20	+ 1.57
5. 9. 44. 18.6	2. 40. 39.85	39.92	+ 0.07	79. 21. 31.87	24.70	— 7.17
7. 11. 19. 37.6	4. 24. 7.63	8.40	+ 0.77	71. 46. 28.98	25.20	— 3.78
8. 12. 11. 58.7	5. 20. 33.96	34.66	+ 0.70	69. 11. 40.86	37.20	— 3.66
10. 14. 3. 52.6	7. 20. 39.30	40.33	+ 1.03	67. 43. 16.82	15.70	— 1.12
11. 15. 0. 57.4	8. 21. 50.06	50.76	+ 0.70	69. 5. 45.40	44.80	— 0.60
30. 6. 13. 30.7	0. 47. 51.30	51.21	— 0.09	90. 33. 32.87	32.80	— 0.07

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

April 19. 1. 4. 54.0	2. 53. 2.50	2.52	+ 0.02	71. 21. 25.89	21.00	— 4.89
June 16. 22. 25. 21.2	4. 5. 40.13	39.85	— 0.28	72. 28. 56.72	59.00	+ 2.28
18. 22. 26. 21.6	4. 14. 33.53	33.54	+ 0.01	71. 47. 21.08	24.20	+ 3.12
20. 22. 28. 25.2	4. 24. 30.78	30.75	— 0.03	71. 3. 14.21	16.30	+ 2.09
26. 22. 41. 0.4	5. 0. 47.45	47.60	+ 0.15	68. 47. 8.14	4.60	— 3.54
27. 22. 44. 2.6	5. 7. 46.65	46.86	+ 0.21	68. 25. 33.75	31.60	— 2.15
29. 22. 50. 54.4	5. 22. 32.75	32.95	+ 0.20	67. 45. 6.08	2.70	— 3.38
July 29. 1. 5. 41.0	9. 32. 1.60	1.91	+ 0.31	73. 43. 59.10	61.20	+ 2.10
Aug. 5. 1. 23. 49.8	10. 17. 49.27	49.46	+ 0.19	78. 26. 7.93	10.50	+ 2.57
7. 1. 27. 42.9	10. 29. 36.12	35.99	— 0.13	79. 49. 7.70	12.30	+ 4.60
8. 1. 29. 27.0	10. 35. 17.04	17.21	+ 0.17	80. 30. 45.04	46.50	+ 1.46
15. 1. 38. 5.9	11. 11. 33.28	33.44	+ 0.16	85. 17. 28.17	31.40	+ 3.23
Nov. 25. 0. 27. 51.2	16. 43. 15.51	15.31	— 0.20	114. 0. 5.11	5.80	+ 0.69

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
Jan. 8. 21. 52. 28.9	17. 5. 50. 23	48.51	— 1.72	107. 32. 23. 65	24.10	+ 0.45
17. 21. 27. 58.6	17. 16. 44. 89	43.47	— 1.42	107. 35. 32. 05	30.60	— 1.45
22. 21. 18. 43.5	17. 27. 11. 03	9.77	— 1.26	107. 51. 40. 63	41.20	+ 0.57
29. 21. 9. 54.9	17. 45. 56. 90	55.58	— 1.32	108. 21. 21. 08	21.80	+ 0.72
Feb. 2. 21. 6. 39.0	17. 58. 26. 66	25.84	— 0.82	108. 38. 20. 53	22.90	+ 2.37
3. 21. 6. 0.8	18. 1. 44. 91	43.80	— 1.11	108. 42. 20. 08	22.60	+ 2.52
5. 21. 4. 55.1	18. 8. 32. 14	31.12	— 1.02	108. 49. 50. 46	53.00	+ 2.54
7. 21. 4. 3.6	18. 15. 33. 65	32.74	— 0.91	108. 56. 35. 09	36.50	+ 1.41
16. 21. 2. 42.0	18. 49. 40. 82	40.37	— 0.45	109. 13. 5. 97	10.60	+ 4.63
25. 21. 4. 28.6	19. 26. 56. 67	55.34	(— 1.33)	108. 59. 28. 15	27.90	— 0.25
28. 21. 5. 31.9	19. 39. 49. 85	49.23	— 0.62	108. 46. 48. 37	51.10	+ 2.73
Mar. 5. 21. 7. 40.2	20. 1. 41. 26	40.75	— 0.51	108. 16. 14. 02	14.30	+ 0.28
10. 21. 10. 7.6	20. 23. 51. 75	51.22	— 0.53	107. 33. 19. 36	22.90	+ 3.54
April 18. 21. 29. 50.2	23. 17. 22. 53	22.28	— 0.25	95. 46. 0. 32	0.30	— 0.02
23. 21. 31. 55.8	23. 39. 11. 38	11.39	+ 0.01	93. 40. 50. 27	49.20	— 1.07
May 9. 21. 38. 34.7	0. 48. 56. 70	56.69	— 0.01	86. 40. 26. 95	26.20	— 0.75
14. 21. 40. 50.2	1. 10. 55. 43	55.39	— 0.04	84. 27. 51. 61	48.60	— 3.01
26. 21. 47. 12.1	2. 4. 37. 03	36.94	— 0.09	79. 19. 17. 98	14.80	— 3.18
27. 21. 47. 48.4	2. 9. 9. 96	10.15	+ 0.19	78. 54. 37. 93	35.60	— 2.33
28. 21. 48. 25.9	2. 13. 44. 13	44.21	+ 0.08	78. 30. 12. 67	9.60	— 3.07
30. 21. 49. 43.4	2. 22. 54. 93	54.98	+ 0.05	77. 41. 62. 92	59.30	— 3.62
June 1. 21. 51. 4.7	2. 32. 9. 61	9.42	— 0.19	76. 54. 52. 60	50.00	— 2.60
4. 21. 53. 13.0	2. 46. 7. 95	8.31	+ 0.36	75. 46. 14. 80	12.10	— 2.70
16. 22. 3. 23.5	3. 43. 38. 76	39.18	+ 0.42	71. 42. 54. 73	50.90	— 3.83
18. 22. 5. 20.9	3. 53. 29. 63	30.02	+ 0.39	71. 8. 2. 77	2.40	— 0.37
19. 22. 6. 21.3	3. 58. 26. 74	27.14	+ 0.40	70. 51. 23. 06	20.00	— 3.06
20. 22. 7. 23.1	4. 3. 25. 21	25.39	+ 0.18	70. 35. 9. 37	6.60	— 2.77
26. 22. 13. 54.8	4. 33. 37. 35	37.75	+ 0.40	69. 8. 31. 24	28.10	— 3.14
27. 22. 15. 3.8	4. 38. 43. 12	43.43	+ 0.31	68. 55. 57. 94	54.20	— 3.74
29. 22. 17. 24.7	4. 48. 57. 52	57.69	+ 0.17	68. 32. 29. 57	28.40	— 1.17
July 17. 22. 40. 38.0	6. 23. 12. 68	12.97	+ 0.29	66. 52. 44. 58	43.50	— 1.08
21. 22. 46. 3.1	6. 44. 24. 84	25.14	+ 0.30	66. 59. 28. 71	28.10	— 0.61
28. 22. 55. 26.5	.....	...	...	67. 37. 9. 51	8.80	— 0.71
Aug. 3. 23. 3. 11.8	7. 52. 51. 58	51.83	+ 0.25	68. 35. 4. 90	4.10	— 0.80
4. 23. 4. 27.9	7. 58. 3. 66	3.88	+ 0.22	68. 46. 57. 03	56.80	— 0.23
14. 23. 16. 14.1	8. 49. 18. 20	18.26	+ 0.06	71. 18. 27. 34	27.50	+ 0.16
18. 23. 20. 30.7	9. 9. 21. 68	21.76	+ 0.08	72. 34. 32. 52	31.60	— 0.92
19. 23. 21. 32.5	9. 14. 20. 19	20.15	— 0.04	72. 54. 47. 84	48.20	+ 0.36
20. 23. 22. 33.4	9. 19. 17. 87	17.53	— 0.34	73. 15. 34. 43	33.80	— 0.63
21. 23. 23. 32.8	9. 24. 13. 91	13.92	+ 0.01	73. 36. 48. 21	47.80	— 0.41
Sep. 8. 23. 38. 45.3	10. 50. 26. 95	26.74	— 0.21	81. 6. 38. 47	36.00	— 2.47
9. 23. 39. 28.2	10. 55. 6. 49	6.30	— 0.19	81. 34. 35. 13	35.60	+ 0.47
Nov. 1. 0. 17. 4.1	14. 57. 49. 25	48.44	— 0.81	106. 27. 22. 20	20.90	— 1.30
3. 0. 19. 9.0	15. 7. 47. 61	46.75	— 0.86	107. 13. 39. 19	36.20	— 2.99
10. 0. 27. 4.5	15. 43. 20. 29	19.64	— 0.65	109. 40. 33. 34	30.90	— 2.44
11. 0. 28. 17.2	15. 48. 29. 79	29.30	— 0.49	109. 59. 28. 91	25.70	— 3.21
12. 0. 29. 31.5	15. 53. 40. 85	40.19	— 0.66	110. 17. 48. 15	47.30	— 0.85
14. 0. 32. 3.5	16. 4. 6. 39	5.63	— 0.76	110. 52. 50. 06	47.40	— 2.66

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
Nov. 20. 0. 40. 6.7	16. 35. 50.29	49.69	— 0.60	112. 23. 18.26	15.30	— 2.96
25. 0. 47. 17.7	17. 2. 45.14	44.53	— 0.61	113. 20. 44.83	42.60	— 2.23
Dec. 11. 1. 11. 51.0	18. 30. 27.42	27.05	— 0.37	114. 23. 33.47	32.30	— 1.17

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

Oct. 24. 18. 0. 25.5	8. 12. 32.93	31.99	— 0.94	68. 41. 39.80	27.10	— 12.70
Nov. 2. 17. 41. 2.6	8. 28. 35.89	35.21	— 0.68	69. 18. 43.46	29.10	— 14.36
16. 17. 6. 39.9	8. 49. 19.25	18.26	— 0.99	70. 7. 24.07	7.50	— 16.57
24. 16. 44. 13.4	8. 58. 21.55	20.52	— 1.03	70. 25. 41.45	24.00	— 17.45
Dec. 8. 15. 58. 51.4	9. 8. 3.89	3.30	— 0.59	70. 31. 26.44	11.60	— 14.84
26. 14. 46. 28.5	9. 6. 27.11	25.85	— 1.26	69. 35. 45.56	25.00	— 20.56

RIGHT ASCENSION and NORTH POLAR DISTANCE of VICTORIA.

Dec. 30. 13. 24. 8.9	7. 59. 40.20	80. 8. 14.86
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.

April 6. 16. 30. 9.7	17. 29. 34.82	38.68	+ 3.86	106. 5. 16.96	13.40	— 3.56
30. 15. 2. 52.2	17. 36. 40.24	45.07	+ 4.83	106. 5. 61.54	55.70	— 5.84
May 10. 14. 20. 50.8	17. 33. 57.53	62.76	+ 5.23	106. 12. 30.96	22.40	— 8.56
13. 14. 7. 36.1	17. 32. 30.24	35.53	+ 5.29	106. 15. 34.90	27.40	— 7.50
14. 14. 3. 7.0	17. 31. 57.02	62.70	+ 5.68	106. 16. 45.61	36.80	— 8.81
19. 13. 40. 17.4	17. 28. 46.45	51.81	+ 5.36	106. 23. 29.49	23.20	— 6.29
21. 13. 30. 57.6	17. 27. 18.22	23.71	+ 5.49	106. 26. 39.82	33.90	— 5.92
22. 13. 26. 15.0	17. 26. 31.37	37.33	+ 5.96	106. 28. 23.57	15.40	— 8.17
28. 12. 57. 33.4	17. 21. 24.39	30.07	+ 5.68	106. 39. 56.48	48.40	— 8.08
30. 12. 47. 49.9	17. 19. 32.48	38.32	+ 5.84	106. 44. 17.07	11.40	— 5.67
31. 12. 42. 57.0	17. 18. 35.27	41.05	+ 5.78	106. 46. 37.11	28.90	— 8.21
June 2. 12. 33. 8.6	17. 16. 38.37	44.15	+ 5.78	106. 51. 22.50	15.40	— 7.10
4. 12. 23. 17.5	17. 14. 38.74	44.68	+ 5.94	106. 56. 23.89	17.40	— 6.49
16. 11. 23. 58.6	17. 2. 28.81	34.67	+ 5.86	107. 31. 37.08	30.30	— 6.78
17. 11. 19. 3.8	17. 1. 29.82	35.66	+ 5.84	107. 34. 52.69	47.90	— 4.79
19. 11. 9. 16.4	16. 59. 33.93	39.75	+ 5.82	107. 41. 37.20	32.00	— 5.20
20. 11. 4. 23.9	16. 58. 37.16	43.01	+ 5.85	107. 44. 66.46	58.50	— 7.96
24. 10. 45. 4.8	16. 55. 0.35	6.05	+ 5.70	107. 59. 18.43	13.00	— 5.43
25. 10. 40. 16.9	16. 54. 8.98	14.68	+ 5.70	108. 2. 61.02	53.60	— 7.42
26. 10. 35. 31.0	16. 53. 18.87	24.61	+ 5.74	108. 6. 42.21	36.90	— 5.31
27. 10. 30. 46.5	16. 52. 30.15	35.91	+ 5.76	108. 10. 28.52	22.90	— 5.62

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF VESTA—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. ^d ^h ^m ^s	^h ^m ^s	^s	^s	^o ['] ["]	["]	["]
June 28. 10. 26. 3.6	16. 51. 43.05	48.63	+ 5.58	108. 14. 16.02	11.60	— 4.42
July 4. 9. 58. 18.7	16. 47. 32.85	38.30	+ 5.45	108. 37. 62.74	56.90	— 5.84
5. 9. 53. 47.1	16. 46. 57.11	62.60	+ 5.49	108. 42. 7.69	3.00	— 4.69
10. 9. 31. 37.8	16. 44. 26.99	32.11	+ 5.12	109. 3. 12.82	8.00	— 4.82
12. 9. 22. 59.3	16. 43. 40.17	45.43	+ 5.26	109. 11. 54.39	48.80	— 5.59

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF IRIS.

Aug. 22. 14. 9. 43.8	0. 12. 51.76	...	...	77. 44. 17.16	...	...
28. 13. 44. 31.8	0. 11. 13.68	...	...	77. 25. 43.11	...	...
Sep. 9. 12. 51. 4.3	0. 4. 56.03	57.62	+ 1.59	77. 32. 44.77	39.50	— 5.27
11. 12. 41. 50.2	0. 3. 33.55	35.17	+ 1.62	77. 37. 10.65	3.80	— 6.85
13. 12. 32. 31.9	0. 2. 6.83	8.31	+ 1.48	77. 42. 42.69	36.50	— 6.19
18. 12. 9. 0.3	23. 58. 14.09	15.63	+ 1.54	....	...	...
20. 11. 59. 30.1	23. 56. 36.45	38.08	+ 1.63	78. 10. 43.73	37.80	— 5.93
22. 11. 50. 0.5	23. 54. 57.39	59.07	+ 1.68	78. 20. 61.95	56.00	— 5.95
26. 11. 30. 58.5	23. 51. 38.47	39.83	+ 1.36	78. 44. 17.70	12.60	— 5.10
29. 11. 16. 43.5	23. 49. 10.86	12.62	+ 1.76	79. 3. 47.61	40.80	— 6.81
Oct. 4. 10. 53. 11.7	23. 45. 17.87	19.53	+ 1.66	79. 39. 7.72	1.30	— 6.42
8. 10. 34. 40.0	23. 42. 29.30	30.76	+ 1.46	80. 8. 64.64	58.70	— 5.94
16. 9. 58. 44.0	23. 37. 59.93	...	...	81. 9. 59.87	...	...
17. 9. 54. 22.4	23. 37. 34.14	...	...	81. 17. 27.54	...	...
Nov. 1. 8. 53. 1.6	23. 35. 11.59	...	...	82. 55. 19.94	...	...
12. 8. 13. 16.4	23. 38. 41.90	...	...	83. 38. 25.06	...	...
15. 8. 3. 7.4	23. 40. 20.98	...	...	83. 48. 2.89	...	...
20. 7. 46. 55.6	23. 43. 49.18	...	...	83. 55. 35.84	...	...
25. 7. 31. 32.1	23. 48. 6.00	...	...	83. 58. 21.30	...	...
Dec. 11. 6. 46. 51.4	0. 6. 22.88	...	...	83. 29. 8.61	...	...

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF METIS.

Jan. 27. 13. 21. 40.2	9. 48. 32.15	28.99	— 3.16	67. 6. 53.95	53.60	— 0.35
Feb. 6. 12. 32. 28.6	9. 38. 38.07	34.59	— 3.48	66. 0. 47.05	52.00	+ 4.95
10. 12. 12. 35.6	9. 34. 27.96	24.46	— 3.50	65. 37. 52.24	58.50	+ 6.26
24. 11. 3. 54.7	9. 20. 47.62	44.03	— 3.59	64. 41. 42.95	44.40	+ 1.45
26. 10. 54. 21.2	9. 19. 5.56	...	...	64. 36. 58.71	...	...
Mar. 3. 10. 30. 55.8	9. 15. 19.17	...	...	64. 29. 20.00	...	...
11. 9. 54. 57.0	9. 10. 46.86	...	...	64. 28. 7.37	...	...
13. 9. 46. 16.3	9. 9. 57.84	...	...	64. 29. 51.81	...	...
20. 9. 16. 56.1	9. 8. 8.51	...	...	64. 41. 29.34	...	...
29. 8. 41. 32.4	9. 8. 8.10	...	...	65. 8. 4.75	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HEBE.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
June 16. 14. 0. 26.6	19. 39. 22.50	...	...	96. 50. 53.90	...	...
17. 13. 55. 57.3	19. 38. 49.07	...	...	96. 53. 45.07	...	...
19. 13. 46. 54.4	19. 37. 37.77	...	...	97. 0. 1.72	...	...
25. 13. 19. 12.3	19. 33. 30.44	29.77	— 0.67	97. 24. 16.71	13.30	— 3.41
26. 13. 14. 31.0	19. 32. 44.98	43.93	— 1.05	97. 29. 6.60	3.10	— 3.50
27. 13. 9. 48.1	19. 31. 57.88	56.88	— 1.00	97. 34. 12.08	6.40	— 5.68
28. 13. 5. 4.3	19. 31. 9.85	8.67	— 1.18	97. 39. 24.57	23.20	— 1.37
July 10. 12. 7. 8.0	19. 20. 22.71	21.66	— 1.05	98. 59. 30.52	29.70	— 0.82
14. 11. 47. 33.3	19. 16. 30.97	29.97	— 1.00	99. 32. 27.49	25.00	— 2.49
17. 11. 32. 51.7	19. 13. 36.63	35.70	— 0.93	99. 58. 50.63	49.00	— 1.63
21. 11. 13. 19.7	19. 9. 47.67	46.55	— 1.12	100. 35. 59.93	58.50	— 1.43
Aug. 5. 10. 1. 56.4	18. 58. 21.17	...	...	103. 7. 59.26	...	...
11. 9. 34. 48.1	18. 53. 47.60	...	...	104. 10. 33.35	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PARTHENOPE.

Sep. 18. 14. 29. 27.6	2. 19. 4.47	11.78	+ 7.31	83. 34. 69.22	38.11	— 31.11
Oct. 10. 12. 49. 25.7	2. 5. 30.28	38.56	+ 8.28	85. 34. 34.99	15.34	— 19.65
15. 12. 25. 24.9	2. 1. 8.32	16.07	+ 7.75	86. 3. 29.87	11.42	— 18.45
Nov. 1. 11. 3. 10.2	1. 45. 41.51	48.76	+ 7.25	87. 26. 60.17	48.24	— 11.93
4. 10. 48. 53.2	1. 43. 11.84	18.63	+ 6.79	87. 37. 38.01	28.73	— 9.28

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of ASTREA.

April 28. 12. 10. 1.5	14. 35. 28.03	33.69	+ 5.66	95. 55. 43.79	67.30	+ 23.51
29. 12. 5. 12.2	14. 34. 34.56	39.97	+ 5.41	95. 50. 55.05	81.90	+ 26.85
May 10. 11. 12. 28.2	14. 25. 3.95	9.48	+ 5.53	95. 6. 43.43	68.60	+ 25.17

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRENE.

May 28. 11. 31. 38.3	15. 55. 15.16	...	...	103. 39. 3.47	...	...
29. 11. 26. 44.2	15. 54. 16.87	...	...	103. 41. 8.76	...	...
30. 11. 21. 51.2	15. 53. 19.64	...	...	103. 43. 16.79	...	...
31. 11. 16. 58.6	15. 52. 22.77	...	...	103. 45. 33.29	...	...
June 2. 11. 7. 15.8	15. 50. 31.44	...	...	103. 50. 17.74	...	...
4. 10. 57. 36.6	15. 48. 43.85	...	...	103. 55. 14.82	...	...
16. 10. 1. 20.3	15. 39. 36.96	...	...	104. 31. 27.66	...	...
17. 9. 56. 48.0	15. 39. 0.43	...	...	104. 34. 57.40	...	...
19. 9. 47. 47.9	15. 37. 52.04	...	...	104. 42. 7.33	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
May 10. 14. 33. 55.4	17. 47. 4.24	7.99	+ 3.75	95. 49. 37.07	28.10	— 8.97
14. 14. 16. 8.5	17. 45. 0.59	4.15	+ 3.56	95. 32. 64.02	54.40	— 9.62
19. 13. 53. 29.9	17. 42. 1.14	4.90	+ 3.76	95. 13. 65.58	43.90	(— 21.68)
21. 13. 44. 19.9	17. 40. 42.51	46.15	+ 3.64	95. 6. 41.30	36.50	— 4.80
31. 12. 57. 37.1	17. 33. 17.76	21.49	+ 3.73	94. 36. 49.16	37.40	— 11.76
June 4. 12. 38. 37.9	17. 30. 1.67	5.30	+ 3.63	94. 27. 52.71	39.00	— 13.71
17. 11. 36. 25.1	17. 18. 53.97	57.74	+ 3.77	94. 12. 33.68	17.10	— 16.58
19. 11. 26. 50.8	17. 17. 11.21	15.14	+ 3.93	94. 11. 68.92	53.80	— 15.12
20. 11. 22. 4.2	17. 16. 20.39	24.20	+ 3.81	94. 11. 69.69	54.20	— 15.49
26. 10. 53. 31.8	17. 11. 22.59	26.43	+ 3.84	94. 14. 63.13	46.70	— 16.43
27. 10. 48. 48.1	17. 10. 34.68	38.52	+ 3.84	94. 15. 59.76	43.60	— 16.16

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

Oct. 14. 14. 14. 9.7	3. 46. 14.45	12.33	— 2.12	.....	...	...
15. 14. 9. 54.7	3. 45. 55.29	53.43	— 1.86	110. 48. 53.01	27.60	— 25.41
24. 13. 30. 31.9	3. 41. 54.98	53.13	— 1.85	113. 31. 81.43	53.90	— 27.53
Dec. 8. 9. 59. 35.1	3. 7. 48.53	46.65	— 1.88	119. 52. 90.01	54.80	— 35.21
30. 8. 26. 23.2	3. 1. 5.66	3.82	— 1.84	117. 48. 52.86	40.60	— 12.26

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES.

Dec. 10. 13. 43. 36.8	7. 0. 20.19	35.60	+ 15.41	63. 21. 52.54	59.70	+ 7.16
26. 12. 26. 15.2	6. 45. 50.76	67.18	+ 16.42	61. 51. 9.92	13.30	+ 3.38

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HYGEIA.

Aug. 22. 14. 29. 35.4	0. 32. 45.38	...	...	81. 16. 13.50	...	...
Sep. 9. 13. 9. 26.2	0. 23. 20.99	...	...	81. 55. 7.15	...	...
13. 12. 51. 4.2	0. 20. 42.12	40.80	— 1.32	82. 8. 47.09	55.30	+ 8.21
Oct. 2. 11. 22. 44.2	0. 7. 2.21	1.13	— 1.08	83. 30. 18.38	20.30	+ 1.92
4. 11. 13. 27.3	0. 5. 36.84	35.92	— 0.92	83. 39. 37.41	46.40	+ 8.99
17. 10. 13. 57.5	23. 57. 12.42	...	...	84. 39. 37.52	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

Jan. 5. 18. 20. 23.2	13. 21. 20.03	18.95	— 1.08	97. 9. 53.00	51.60	— 1.40
8. 18. 9. 36.6	13. 22. 21.34	20.32	— 1.02	97. 15. 19.87	14.40	— 5.47
15. 17. 44. 7.1	13. 24. 23.50	22.31	— 1.19	97. 25. 38.22	35.50	— 2.72
17. 17. 36. 44.4	13. 24. 52.76	51.52	— 1.24	97. 27. 62.83	58.20	— 4.63

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
Jan. 19. 17. 29. 19'3	13. 25. 19'47	18'15	— 1'32	97. 30. 10'20	5'00	— 5'20
21. 17. 21. 51'4	13. 25. 43'43	42'16	— 1'27	97. 31. 63'40	55'90	— 7'50
22. 17. 18. 6'2	13. 25. 54'19	53'16	— 1'03	97. 32. 51'03	45'30	— 5'73
23. 17. 14. 20'6	13. 26. 4'60	3'50	— 1'10	97. 33. 33'53	30'70	— 2'83
29. 16. 51. 32'6	13. 26. 52'20	51'09	— 1'11	97. 36. 41'42	37'10	— 4'32
Feb. 2. 16. 36. 6'8	13. 27. 10'08	8'85	— 1'23	97. 37. 22'13	18'40	— 3'73
3. 16. 32. 13'8	13. 27. 12'96	11'52	— 1'44	97. 37. 23'95	18'20	— 5'75
10. 16. 4. 40'9	13. 27. 11'40	10'31	— 1'09	97. 35. 23'77	20'60	— 3'17
16. 15. 40. 36'9	13. 26. 42'84	41'78	— 1'06	97. 30. 61'35	59'70	— 1'65
Mar. 13. 13. 56. 7'2	13. 20. 29'77	28'29	— 1'48	96. 48. 40'56	37'20	— 3'36
26. 12. 59. 40'0	13. 15. 8'45	7'02	— 1'43	96. 14. 52'39	47'20	— 5'19
29. 12. 46. 30'7	13. 13. 46'64	45'24	— 1'40	96. 6. 23'69	18'70	— 4'99
April 4. 12. 20. 7'2	13. 10. 58'09	56'81	— 1'28	95. 48. 63'26	59'50	— 3'76
5. 12. 15. 43'0	13. 10. 29'75	28'35	— 1'40	95. 46. 9'48	4'90	— 4'58
12. 11. 44. 52'5	13. 7. 10'06	8'64	— 1'42	95. 25. 50'60	47'70	— 2'90
19. 11. 14. 6'0	13. 3. 54'42	52'91	— 1'51	95. 6. 13'69	9'20	— 4'49
22. 11. 0. 57'1	13. 2. 32'93	31'80	— 1'13	94. 58. 11'10	5'60	— 5'50
23. 10. 56. 34'8	13. 2. 6'50	5'26	— 1'24	94. 55. 31'23	28'00	— 3'23
25. 10. 47. 51'0	13. 1. 14'40	13'04	— 1'36	94. 50. 24'60	19'10	— 5'50
28. 10. 34. 47'6	12. 59. 58'46	57'12	— 1'34	94. 42. 55'92	52'90	— 3'02
29. 10. 30. 27'1	12. 59. 33'87	32'52	— 1'35	94. 40. 33'22	29'00	— 4'22
May 4. 10. 8. 50'9	12. 57. 36'83	35'59	— 1'24	94. 29. 15'98	11'30	— 4'68
8. 9. 51. 42'1	12. 56. 11'49	10'18	— 1'31	94. 21. 8'10	4'40	— 3'70
9. 9. 47. 26'1	12. 55. 51'34	50'07	— 1'27	94. 19. 17'10	11'00	— 6'10
10. 9. 43. 10'7	12. 55. 31'79	30'47	— 1'32	94. 17. 25'54	21'00	— 4'54
14. 9. 26. 14'3	12. 54. 18'79	17'43	— 1'36	94. 10. 41'57	36'80	— 4'77
15. 9. 22. 1'5	12. 54. 1'86	0'55	— 1'31	94. 9. 9'68	4'90	— 4'78
17. 9. 13. 37'9	12. 53. 29'96	28'51	— 1'45	94. 6. 16'94	12'40	— 4'54
19. 9. 5. 16'4	12. 52. 60'23	58'81	— 1'42	94. 3. 39'74	35'40	— 4'34
20. 9. 1. 6'5	12. 52. 46'19	44'85	— 1'34	94. 2. 29'49	22'70	— 6'79
22. 8. 52. 48'5	12. 52. 19'98	18'76	— 1'22	94. 0. 14'95	9'30	— 5'65
23. 8. 48. 40'5	12. 52. 7'81	6'63	— 1'18	93. 59. 12'47	8'70	— 3'77
29. 8. 24. 5'7	12. 51. 8'39	7'14	— 1'25	93. 54. 34'02	31'20	— 2'82
31. 8. 15. 59'3	12. 50. 53'72	52'49	— 1'23	93. 53. 36'54	32'20	— 4'34

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN.

Jan. 9. 5. 43. 9'1	0. 57. 47'78	46'54	— 1'24	86. 30. 58'84	55'80	— 3'04
Sep. 9. 14. 55. 48'1	2. 9. 60'34	59'42	— 0'92	79. 43. 27'15	18'50	— 8'65
13. 14. 39. 25'6	2. 9. 21'37	20'33	— 1'04	79. 47. 45'33	36'70	— 8'63
18. 14. 18. 49'3	2. 8. 24'42	23'86	(— 0'56)	79. 53. 42'86	35'10	— 7'76
27. 13. 41. 25'9	2. 6. 23'88	23'00	— 0'88	80. 5. 57'76	48'10	— 9'66
Oct. 4. 13. 12. 6'7	2. 4. 35'75	34'63	— 1'12	80. 16. 32'39	20'90	— 11'49
8. 12. 55. 16'9	2. 3. 29'41	28'24	— 1'17	80. 22. 51'70	40'30	— 11'40
27. 11. 34. 55'5	1. 57. 49'31	48'20	— 1'11	80. 53. 61'86	51'30	— 10'56
Nov. 1. 11. 13. 45'4	1. 56. 18'52	17'44	— 1'08	81. 1. 61'66	52'20	— 9'46
4. 11. 1. 4'2	1. 55. 24'88	23'85	— 1'03	81. 6. 41'74	32'40	— 9'34
7. 10. 48. 24'2	1. 54. 32'42	31'23	— 1'19	81. 11. 13'38	4'50	— 8'88

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error Tables in N. P. D.
1851. d h m s	h m s	s	s	° ' "	"	"
Nov. 12. 10. 27. 19.9	1. 53. 7.42	6.38	— 1.04	81. 18. 26.48	16.50	— 9.98
14. 10. 18. 55.6	1. 52. 34.94	33.65	— 1.29	81. 21. 8.46	0.50	— 7.96
17. 10. 6. 20.4	1. 51. 47.25	46.05	— 1.20	81. 24. 64.83	56.00	— 8.83
18. 10. 2. 9.1	1. 51. 31.82	30.62	— 1.20	81. 26. 20.87	11.40	— 9.47
21. 9. 49. 36.5	1. 50. 46.86	45.76	— 1.10	81. 29. 57.93	48.20	— 9.73
22. 9. 45. 26.2	1. 50. 32.30	31.32	— 0.98	81. 30. 67.10	57.00	— 10.10
24. 9. 37. 6.5	1. 50. 4.49	3.24	— 1.25	81. 33. 18.26	9.30	— 8.96
25. 9. 32. 56.5	1. 49. 50.40	49.62	— 0.78	81. 34. 22.02	12.80	— 9.22
Dec. 2. 9. 3. 59.0	1. 48. 23.98	22.85	— 1.13	81. 40. 51.85	42.90	— 8.95
8. 8. 39. 22.4	1. 47. 22.69	21.43	— 1.26	81. 44. 65.67	56.20	— 9.47
11. 8. 27. 8.4	1. 46. 56.34	55.56	— 0.78	81. 46. 41.89	33.10	— 8.79
26. 7. 26. 53.9	1. 45. 40.34	38.86	— 1.48	81. 49. 29.07	20.60	— 8.47
30. 7. 11. 4.9	1. 45. 34.94	34.02	— 0.92	81. 48. 43.56	33.30	— 10.26

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of URANUS.

Jan. 9. 6. 23. 51.6	1. 38. 36.95	47.31	+ 10.36	80. 18. 76.20	22.30	— 53.90
21. 5. 37. 5.9	1. 39. 2.18	12.33	+ 10.15	80. 15. 87.07	32.00	— 55.07
22. 5. 33. 13.2	1. 39. 5.48	15.67	+ 10.19	80. 15. 64.90	10.60	— 54.30
23. 5. 29. 20.9	1. 39. 9.06	19.21	+ 10.15	80. 14. 104.12	48.20	— 55.92
Sep. 8. 14. 57. 31.7	2. 7. 47.72	59.13	+ 11.41	77. 36. 108.91	53.50	— 55.41
11. 14. 45. 27.4	2. 7. 31.05	42.47	+ 11.42	77. 38. 79.76	23.80	— 55.96
Oct. 16. 12. 23. 16.1	2. 2. 55.78	67.29	+ 11.51	78. 2. 112.37	54.80	— 57.57
Nov. 1. 11. 17. 51.6	2. 0. 25.37	36.80	+ 11.43	78. 16. 71.26	15.10	— 56.16
4. 11. 5. 36.0	1. 59. 57.36	68.85	+ 11.49	78. 18. 101.58	43.50	— 58.08
7. 10. 53. 20.8	1. 59. 29.83	41.26	+ 11.43	78. 21. 67.15	9.80	— 57.35
12. 10. 32. 56.2	1. 58. 44.71	56.36	+ 11.65	78. 25. 66.12	7.80	— 58.32
17. 10. 12. 33.9	1. 58. 1.79	13.20	+ 11.41	78. 28. 114.20	56.00	— 58.20
20. 10. 0. 21.2	1. 57. 36.71	48.33	+ 11.62	78. 31. 66.51	7.20	— 59.31
22. 9. 52. 13.4	1. 57. 20.80	32.26	+ 11.46	78. 32. 89.36	31.90	— 57.46
24. 9. 44. 6.1	1. 57. 5.26	16.61	+ 11.35	78. 33. 112.61	54.30	— 58.31
25. 9. 40. 2.6	1. 56. 57.66	68.96	+ 11.30	78. 34. 92.64	34.50	— 58.14
Dec. 11. 8. 35. 24.0	1. 55. 13.35	24.69	+ 11.34	78. 43. 95.53	37.80	— 57.73
26. 7. 35. 25.4	1. 54. 13.23	24.18	+ 10.95	78. 48. 98.12	40.60	— 57.52
30. 7. 19. 32.5	1. 54. 3.91	15.06	+ 11.15	78. 49. 78.88	22.50	— 56.38

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE.

Aug. 11. 13. 21. 48.2	22. 41. 25.00	25.29	+ 0.29	99. 13. 15.37	14.15	— 1.22
18. 12. 53. 36.3	22. 40. 44.33	44.51	+ 0.18	99. 17. 27.85	26.80	— 1.05
19. 12. 49. 34.6	22. 40. 38.45	38.54	+ 0.09	99. 18. 3.99	3.59	— 0.40
20. 12. 45. 32.4	22. 40. 32.20	32.54	+ 0.34	99. 18. 42.27	40.51	— 1.76
21. 12. 41. 30.6	22. 40. 26.25	26.51	+ 0.26	99. 19. 18.81	17.55	— 1.26
22. 12. 37. 28.6	22. 40. 20.21	20.47	+ 0.26	99. 19. 56.05	54.68	— 1.37
23. 12. 33. 26.8	22. 40. 14.30	14.38	+ 0.08	....	...	...
30. 12. 5. 12.7	22. 39. 31.37	31.40	+ 0.03	99. 24. 56.64	53.87	— 2.77

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1851. d h m s	h m s	s	s	o ' "	"	"
Sep. 4. 11. 45. 2.0	22. 39. 0.42	0.55	+ 0.13	99. 28. 0.89	0.64	— 0.25
9 11. 24. 52.2	22. 38. 29.81	29.91	+ 0.10	99. 31. 8.19	5.08	— 3.11
10. 11. 20. 50.2	22. 38. 23.65	23.84	+ 0.19	99. 31. 43.33	41.51	— 1.82
11. 11. 16. 48.2	22. 38. 17.54	17.79	+ 0.25	99. 32. 18.41	17.78	— 0.63
12. 11. 12. 46.2	22. 38. 11.52	11.76	+ 0.24	99. 32. 55.66	53.85	— 1.81
13. 11. 8. 44.5	22. 38. 5.63	5.76	+ 0.13	99. 33. 30.90	29.73	— 1.17
15. 11. 0. 41.1	22. 37. 54.08	53.84	— 0.24	99. 34. 41.52	40.83	— 0.69
20. 10. 40. 32.1	22. 37. 24.46	24.69	+ 0.23	99. 37. 34.47	34.29	— 0.18
22. 10. 32. 28.9	22. 37. 13.07	13.34	+ 0.27	99. 38. 41.98	41.63	— 0.35
Oct. 4. 9. 44. 65.1	22. 36. 9.94	10.01	+ 0.07	99. 44. 57.13	53.86	— 3.27
11. 9. 16. 11.8	22. 35. 37.94	37.90	— 0.04	99. 48. 2.61	0.11	— 2.50
16. 8. 56. 11.9	22. 35. 17.50	17.54	+ 0.04	99. 49. 54.67	56.81	+ 2.14
17. 8. 52. 12.5	22. 35. 14.06	13.75	— 0.31	99. 50. 18.72	18.40	— 0.32
Nov. 1. 7. 52. 29.6	22. 34. 29.58	29.61	+ 0.03	99. 54. 26.43	24.70	— 1.73
3. 7. 44. 33.8	22. 34. 25.63	25.66	+ 0.03	99. 54. 49.23	45.83	— 3.40
4. 7. 40. 36.1	22. 34. 23.81	23.87	+ 0.06	99. 54. 55.68	55.32	— 0.36
12. 7. 8. 58.9	22. 34. 13.88	13.91	+ 0.03	99. 55. 47.90	44.84	— 3.06
25. 6. 17. 53.1	22. 34. 14.87	14.92	+ 0.05	99. 55. 23.39	22.24	— 1.15

INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.	Mean Day, 1851.	Error in R. A.	Number of Obs.	Error in N.P.D.	Number of Obs.	Error in Ecliptic N.P.D.
Jan. 6 to Jan. 30	January 20	— 0.24	11	+ 1.23	10	+ 0.495
Feb. 4 to Feb. 22	February 12	— 0.27	9	+ 0.35	8	— 0.954
March 13 to April 8	March 26	— 0.29	8	+ 1.02	9	— 0.787
April 16 to May 9	April 29	— 0.21	8	+ 0.42	7	— 0.570
May 14 to June 5	May 27	— 0.19	11	— 0.42	11	— 0.866
June 17 to July 7	June 28	— 0.21	10	— 0.92	11	— 0.769
July 10 to July 31	July 20	— 0.35	12	— 1.07	11	— 0.069
Aug. 4 to Aug. 25	August 14	— 0.17	13	— 1.93	12	— 1.031
Aug. 29 to Sep. 23	September 13	— 0.17	13	— 1.65	11	— 0.515
Oct. 1 to Oct. 26	October 13	— 0.20	8	— 0.16	7	+ 0.972
Oct. 30 to Nov. 19	November 10	— 0.10	11	— 1.28	10	— 0.831
Nov. 24 to Dec. 18	December 5	— 0.06	7	— 0.46	7	— 0.355

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,
 $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$,
 and altering the number of observations so as to make the assumed weights of opposite parts of the year equal :

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} + 0.495 = + 0.4985 x - 0.8669 y + z \\ - 0.954 = + 0.8011 x - 0.5986 y + z \\ - 0.787 = + 0.9958 x + 0.0915 y + z \end{array} \right. & \begin{array}{l} \text{Weight 12} \\ ,, 10 \\ ,, 10 \end{array} \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 0.570 = + 0.7821 x + 0.6232 y + z \\ - 0.866 = + 0.4139 x + 0.9103 y + z \\ - 0.769 = - 0.1068 x + 0.9943 y + z \end{array} \right. & \begin{array}{l} ,, 7 \\ ,, 11 \\ ,, 10 \end{array} \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 0.069 = - 0.4558 x + 0.8901 y + z \\ - 1.031 = - 0.7777 x + 0.6286 y + z \\ - 0.515 = - 0.9850 x + 0.1725 y + z \end{array} \right. & \begin{array}{l} ,, 10 \\ ,, 11 \\ ,, 11 \end{array} \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} + 0.972 = - 0.9423 x - 0.3346 y + z \\ - 0.831 = - 0.6752 x - 0.7377 y + z \\ - 0.355 = - 0.2954 x - 0.9554 y + z \end{array} \right. & \begin{array}{l} ,, 9 \\ ,, 11 \\ ,, 8 \end{array}
 \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1851.

Equations multiplied by the Weights.

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} + 5.940 = + 5.9820 x - 10.4028 y + 12 z \\ - 9.540 = + 8.0110 x - 5.9860 y + 10 z \\ - 7.870 = + 9.9580 x + 0.9150 y + 10 z \end{array} \right. & \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 3.990 = + 5.4747 x + 4.3624 y + 7 z \\ - 9.526 = + 4.5529 x + 10.0133 y + 11 z \\ - 7.690 = - 1.0680 x + 9.9430 y + 10 z \end{array} \right. & \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 0.690 = - 4.5580 x + 8.9010 y + 10 z \\ - 11.341 = - 8.5547 x + 6.9146 y + 11 z \\ - 5.665 = - 10.8350 x + 1.8975 y + 11 z \end{array} \right. & \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} + 8.748 = - 8.4807 x - 3.0114 y + 9 z \\ - 9.141 = - 7.4272 x - 8.1147 y + 11 z \\ - 2.840 = - 2.3632 x - 7.6432 y + 8 z \end{array} \right. &
 \end{array}$$

New Equations formed by adding and subtracting those above, as indicated below :

$$\begin{array}{l}
 \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\
 - 53.605 = - 9.3082 x + 7.7887 y + 120 z \\
 \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\
 - 11.747 = + 75.1294 x + 9.9011 y \\
 \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\
 + 24.199 = + 20.6680 x - 76.2749 y
 \end{array}$$

Solution of these Equations :

$$\begin{array}{l}
 x = - 0.111 \\
 y = - 0.347 \\
 z = - 0.433
 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic N. P. D. is negative, or, the assumed Ecliptic is north of the Sun's true path, by $0''.111$; and therefore that the right ascensions of all stars ought to be diminished by $\frac{0''.111}{15 \times \sin 23^\circ.28'} = 0''.019$.

The second term indicates that the obliquity assumed in the Nautical Almanac ought to be diminished by $0''.347$.

The third term indicates that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $0''.866$.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1851.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 6 to Jan. 30	11	10	January 20	— 0.24	+ 1.23	— 3.57	+ 0.50
Feb. 4 to Feb. 22	9	8	February 12	— 0.27	+ 0.35	— 3.83	— 0.95
March 13 to April 8	8	9	March 26	— 0.29	+ 1.02	— 4.40	— 0.79
April 16 to May 9	8	7	April 29	— 0.21	+ 0.42	— 3.02	— 0.57
May 14 to June 5	11	11	May 27	— 0.19	— 0.42	— 2.54	— 0.87
June 17 to July 7	10	11	June 28	— 0.21	— 0.92	— 2.94	— 0.77
July 10 to July 31	12	11	July 20	— 0.35	— 1.07	— 5.03	— 0.07
Aug. 4 to Aug. 25	13	12	August 14	— 0.17	— 1.93	— 2.96	— 1.03
Aug. 29 to Sep. 23	13	11	September 13	— 0.17	— 1.65	— 2.99	— 0.52
Oct. 1 to Oct. 26	8	7	October 13	— 0.20	— 0.16	— 2.81	+ 0.97
Oct. 30 to Nov. 19	11	10	November 10	— 0.10	— 1.28	— 1.73	— 0.83
Nov. 24 to Dec. 18	7	7	December 5	— 0.06	— 0.46	— 0.88	— 0.36

MERCURY.

April 19	1	1	April 19	+ 0.02	— 4.89	+ 1.70	— 4.59
June 16 to June 29	6	6	June 24	+ 0.04	— 0.26	+ 0.59	— 0.18
July 29 to Aug. 15	5	5	August 7	+ 0.14	+ 2.79	+ 2.95	+ 1.84
Nov. 25	1	1	November 25	— 0.20	+ 0.69	— 2.63	+ 1.04

VENUS.

Jan. 8 to Jan. 29	4	4	January 20	— 1.43	+ 0.07	— 20.49	+ 1.66
Feb. 2 to Feb. 16	5	5	February 8	— 0.86	+ 2.69	— 12.30	+ 2.36
Feb. 25 to March 10	3	4	March 5	— 0.55	+ 1.58	— 8.00	+ 0.02
April 18 to May 14	4	4	May 2	— 0.07	— 1.21	— 0.48	— 1.53
May 26 to June 4	6	6	May 31	+ 0.07	— 2.92	+ 1.92	— 2.43
June 16 to June 29	7	7	June 23	+ 0.32	— 2.58	+ 4.90	— 1.74
July 17 to Aug. 4	4	5	July 28	+ 0.27	— 0.69	+ 3.62	— 1.17
Aug. 14 to Aug. 21	5	5	August 19	— 0.05	— 0.29	— 0.77	— 0.07

VENUS—concluded.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1851.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Sep. 8 to Sep. 9	2	2	September 10	— 0.20	— 1.00	— 3.13	+ 0.21
Nov. 1 to Nov. 14	6	6	November 9	— 0.71	— 2.24	— 10.29	+ 0.15
Nov. 20 to Dec. 11	3	3	November 29	— 0.53	— 2.12	— 7.38	— 1.67

MARS.

Oct. 24 to Nov. 24	4	4	November 10	— 0.91	— 15.27	— 16.33	— 11.48
Dec. 8 to Dec. 26	2	2	December 18	— 0.93	— 17.70	— 17.77	— 13.08

VESTA.

April 6 to April 30	2	2	April 19	+ 4.35	— 4.70	+ 62.97	— 7.35
May 10 to June 4	11	11	May 24	+ 5.64	— 7.35	+ 81.11	— 12.19
June 16 to June 28	9	9	June 22	+ 5.76	— 5.88	+ 81.34	— 14.61
July 4 to July 12	4	4	July 8	+ 5.33	— 5.24	+ 74.44	— 14.79

JUNO.

May 10 to June 4	6	5	May 23	+ 3.68	— 9.77	+ 57.51	— 11.78
June 17 to June 27	5	5	June 21	+ 3.84	— 15.96	+ 59.14	— 20.52

PALLAS.

Oct. 14 to Oct. 24	3	2	October 20	— 1.94	— 26.47	— 23.76	— 33.33
Dec. 8 to Dec. 30	2	2	December 19	— 1.86	— 23.74	— 18.48	— 31.32

CERES.

Dec. 10 to Dec. 26	2	2	December 19	+ 15.92	+ 5.27	+ 212.23	— 14.49
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JUPITER.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1851.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 5 to Jan. 23	8	8	January 17	— 1'16	— 4'44	— 17'68	+ 2'30
Jan. 29 to Feb. 16	5	5	February 7	— 1'19	— 3'72	— 17'84	+ 3'09
March 13 to April 5	5	5	March 29	— 1'40	— 4'38	— 21'01	+ 3'83
April 12 to May 4	8	8	April 24	— 1'32	— 4'19	— 19'83	+ 3'71
May 8 to May 31	12	12	May 18	— 1'31	— 4'68	— 19'90	+ 3'27

SATURN.

Jan. 9	1	1	January 9	— 1'24	— 3'04	— 15'96	— 9'97
Sep. 9 to Oct. 8	5	6	September 25	— 1'03	— 9'60	— 11'06	— 14'18
Oct. 27 to Nov. 25	12	12	November 13	— 1'10	— 9'37	— 12'00	— 14'49
Dec. 2 to Dec. 30	5	5	December 15	— 1'11	— 9'19	— 12'12	— 14'43

URANUS.

Jan. 9 to Jan. 23	4	4	January 19	+ 10'21	— 54'80	+ 160'63	+ 3'39
Sep. 8 to Sep. 11	2	2	September 11	+ 11'42	— 55'69	+ 176'36	+ 4'01
Oct. 16 to Nov. 12	5	5	November 2	+ 11'50	— 57'50	+ 178'37	+ 4'14
Nov. 17 to Nov. 25	5	5	November 22	+ 11'43	— 58'28	+ 177'74	+ 3'57
Dec. 11 to Dec. 30	3	3	December 22	+ 11'15	— 57'21	+ 173'73	+ 3'59

NEPTUNE.

Aug. 11 to Aug. 30	8	7	August 21	+ 0'19	— 1'40	+ 3'13	— 0'25
Sep. 4 to Sep. 22	9	9	September 13	+ 0'14	— 0'84	+ 2'24	— 0'01
Oct. 4 to Oct. 17	4	4	October 12	— 0'06	— 0'99	— 0'45	— 1'25
Nov. 1 to Nov. 25	5	5	November 9	+ 0'04	— 1'94	+ 1'27	— 1'58

ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.

MERCURY.

Day, 1851.		Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.				Error of Tables in Hel. E. P. D.
		"	"	"	"	"
April	19	+ 1.70 =	+ 0.100 δL + 182705 $\delta \rho$ + 0.900 δl - 57842 δr			- 15.21
June	24	+ 0.59 =	+ 0.054 - 202736 + 0.946 + 72073			- 0.50
August	7	+ 2.95 =	+ 0.203 + 144285 + 0.797 - 61893			+ 5.02
November	25	- 2.63 =	+ 0.306 + 54199 + 0.695 - 25181			+ 3.16

VENUS.

January	20	-20.49 =	- 0.875 δL - 438732 $\delta \rho$ + 1.870 δl + 319433 δr			+ 0.94
February	8	-12.30 =	- 0.277 - 370195 + 1.273 + 269253			+ 1.79
March	5	- 8.00 =	+ 0.072 - 279023 + 0.927 + 202894			+ 0.02
May	2	- 0.48 =	+ 0.321 - 151499 + 0.679 + 109323			- 2.45
May	31	+ 1.92 =	+ 0.363 - 112217 + 0.637 + 80253			- 4.53
June	23	+ 4.90 =	+ 0.384 - 86445 + 0.616 + 61570			- 3.56
July	28	+ 3.62 =	+ 0.403 - 52779 + 0.597 + 37434			- 2.64
August	19	- 0.77 =	+ 0.411 - 33650 + 0.590 + 23914			- 0.16
September	10	- 3.13 =	+ 0.416 - 15567 + 0.585 + 11115			+ 0.50
November	9	-10.29 =	+ 0.420 + 29910 + 0.580 - 21978			+ 0.35
November	29	- 7.38 =	+ 0.417 + 44701 + 0.583 - 33025			- 3.75

MARS.

November	10	-16.33 =	+ 1.169 δL - 120526 $\delta \rho$ - 0.169 δl + 191748 δr			- 7.72
December	18	-17.77 =	+ 1.846 - 119209 - 0.847 + 195749			- 6.32

VESTA.

		"	"	"	"	"
April	19	+ 62.97 =	+ 1.406 δL - 56430 $\delta \rho$			- 7.05 - 5204 $\delta \rho$
May	24	+ 81.11 =	+ 1.823 - 27284			- 7.47 - 5288
June	22	+ 81.34 =	+ 1.849 + 22290			- 7.42 - 3800
July	8	+ 74.44 =	+ 1.690 + 43172			- 7.78 - 2654

JUNO.

Day, 1851.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
May 23	$+ 57.51 = + 1.420 \delta L - 11541 \delta \rho$	$-10.25 - 6314 \delta \rho$
June 21	$+ 59.14 = + 1.467 + 6000$	$-13.98 - 6817$

PALLAS.

October 20	$- 23.76 = + 1.733 \delta L - 25224 \delta \rho$	$-28.12 + 28260 \delta \rho$
December 19	$- 18.48 = + 1.445 + 65940$	$-24.32 + 33460$

CERES.

December 19	$+ 212.23 = + 1.574 \delta L - 11951 \delta \rho$	$-10.24 - 2313 \delta \rho$
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JUPITER.

January 17	$- 17.68 = + 1.015 \delta L - 7009 \delta r - 0.015 \delta l + 38894 \delta \rho$	$+ 2.23$
February 7	$- 17.84 = + 1.085 - 6805 - 0.085 + 37630$	$+ 2.81$
March 29	$- 21.01 = + 1.219 - 1651 - 0.219 + 8953$	$+ 3.14$
April 24	$- 19.83 = + 1.214 + 2608 - 0.214 - 13925$	$+ 3.05$
May 18	$- 19.90 = + 1.158 + 5617 - 0.158 - 30194$	$+ 2.80$

SATURN.

January 9	$- 15.96 = + 0.993 \delta L + 2319 \delta r + 0.007 \delta l - 2201 \delta \rho$	$- 9.99$
September 25	$- 11.06 = + 1.102 - 1380 - 0.102 + 12746$	$- 12.85$
November 13	$- 12.00 = + 1.111 + 952 - 0.111 - 8975$	$- 13.04$
December 15	$- 12.12 = + 1.065 + 2094 - 0.065 - 19631$	$- 13.49$

URANUS.

January 19	$+ 160.63 = + 0.998 \delta L + 516 \delta r + 0.002 \delta l - 10372 \delta \rho$	$+ 3.39$
September 11	$+ 176.36 = + 1.037 - 392 - 0.037 + 7749$	$+ 3.87$
November 2	$+ 178.37 = + 1.052 + 67 - 0.052 - 1404$	$+ 3.93$
November 22	$+ 177.74 = + 1.046 + 253 - 0.046 - 5155$	$+ 3.41$
December 22	$+ 173.73 = + 1.026 + 457 - 0.026 - 9212$	$+ 3.50$

NEPTUNE.

Day, 1851.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
August 21	+ 3.13 = + 1.033 δL - 41 δr - 0.034 δl + 1277 $\delta \rho$.	- 0.24
September 13	+ 2.24 = + 1.033 + 50 - 0.034 - 1545	- 0.01
October 12	- 0.45 = + 1.025 + 154 - 0.025 - 4700	- 1.22
November 9	+ 1.27 = + 1.011 + 215 - 0.011 - 6549	- 1.56

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE.

Day, 1851.	Errors from Observation with Transit-Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1851.	Errors from Observation with Transit-Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Jan. 5	"	"		+ 11.01	+ 3.93	R	Mar. 8	"	"		- 1.82	+ 4.21	H
6				+ 3.86	+ 2.61	E	9				- 0.72	+ 4.82	D
8	- 0.99	+ 1.13	E	+ 1.16	+ 4.08	H	10				+ 1.00	+ 5.22	R
9	- 0.05	+ 1.26	D	- 1.69	+ 1.66	R	11	+ 2.54	+ 0.71	D	+ 10.69	+ 0.64	E
12				+ 14.54	- 3.43	E	13	+ 13.81	- 3.72	E	+ 14.06	- 3.12	D
15				+ 21.24	- 4.62	D	14	+ 8.60	- 4.20	R	+ 14.93	- 3.59	R
16				+ 19.75	+ 1.47	R	15				+ 14.62	- 8.33	E
17				+ 28.12	- 3.17	F	16	+ 12.73	- 5.77	H	+ 12.70	- 8.41	R
18	+ 17.87	- 9.21	R	+ 19.26	- 7.44	D	18	+ 11.34	- 8.40	H	+ 12.65	- 10.31	R
19				+ 18.51	- 6.63	E	19				+ 6.00	- 10.99	E
21	+ 12.09	- 6.21	F	+ 14.44	- 0.78	R	20	+ 1.63	- 3.96	H	+ 7.75	- 6.56	R
22	+ 17.98	- 4.90	W E	+ 14.01	- 5.07	R	21				+ 4.18	- 4.08	E
23				+ 7.63	- 2.62	D	23				+ 3.38	+ 1.19	E
24	+ 11.78	- 1.76	D	+ 15.77	+ 1.69	F	24				+ 4.69	+ 1.08	R
25				+ 10.39	+ 0.45	E	26				(+ 0.76)	(+ 13.74)	D
26	+ 2.54	+ 8.65	M	+ 1.99	+ 1.87	R							
27				- 3.75	+ 8.92	E	April 5				- 0.14	+ 5.89	E
Feb. 4				+ 2.04	+ 3.55	D	6				+ 0.26	+ 2.95	H
6				+ 0.30	+ 3.20	E	8				+ 8.18	- 1.14	R
8	- 1.26	+ 0.54	E	+ 2.04	+ 2.42	R	9	+ 11.21	- 4.29	W E	+ 13.87	- 3.11	D
9				+ 6.73	+ 1.96	H	10	+ 9.65	- 4.56	R	+ 11.22	- 5.32	H
10	+ 1.02	- 4.79	M	+ 6.66	+ 2.05	E	11				+ 10.08	- 2.50	D
11	+ 6.54	- 0.72	R	+ 14.87	- 1.73	D	12	+ 10.25	- 7.26	H	+ 14.06	- 4.54	R
12				+ 17.84	- 6.87	E	13	+ 7.31	- 6.08	M	+ 12.51	- 7.58	J H
13	+ 16.87	- 3.97	D	+ 16.77	- 3.77	R	14	+ 9.31	- 8.52	D			
14	+ 15.78	- 3.72	E	+ 22.06	- 2.77	F	17	+ 5.39	- 4.38	H	+ 5.07	- 7.49	W E
15	+ 18.53	- 8.03	H	+ 19.92	- 5.61	R	18	+ 7.08	- 1.97	D	+ 0.53	- 4.15	R
16	+ 18.47	- 5.22	D	+ 13.15	- 9.09	E	19				+ 3.59	- 7.10	W E
17				+ 17.82	- 9.20	R	20	+ 3.50	+ 0.04	E	+ 8.25	+ 0.32	R
21	+ 2.43	- 0.51	E	+ 2.14	+ 0.10	R	22				+ 4.12	+ 2.26	R
22	+ 3.66	+ 0.18	H	- 0.46	+ 0.74	D	23				- 3.69	- 0.10	E
24				- 7.73	- 0.18	E	25				- 7.75	+ 5.82	D

Feb. 10 and 13. Transit-Circle. Very cloudy; the Moon was observed in a perfectly dark field, with the wires illuminated.

March 26. Altazimuth. Very faint; the Sun had been for some time above the horizon when the observation was made: the transit-observation for zenith distance is only approximate.

ERRORS of the MOON'S TABULAR PLACE—*continued.*

Day, 1851.	Errors from Observation with Transit-Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1851.	Errors from Observation with Transit-Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
May 3	"	"		+ 0.26	+ 0.23	R	July 16	"	"		- 3.23	- 2.58	R
4				+ 5.79	- 0.70	D	17	- 1.03	+ 2.01	H	- 2.85	- 0.88	JWB
8	+ 11.12	- 7.09	D	+ 9.52	- 6.90	WE	18	+ 3.49	- 0.47	R	- 3.88	- 3.86	E
9				+ 15.72	- 9.28	H	20	+ 6.40	- 0.31	E	+ 3.07	+ 0.39	H
10	+ 11.36	- 8.43	WE	+ 13.55	- 8.37	D	21	+ 9.80	- 1.65	H	+ 5.03	- 1.30	R
11				+ 10.64	- 5.03	R							
12				+ 10.41	- 0.30	WE	Aug. 3	+ 12.71	- 1.16	M	+ 17.00	+ 0.38	JH
13	+ 5.76	- 2.04	R	+ 6.07	+ 0.16	H	5	+ 8.20	- 0.88	JWB	+ 9.57	- 0.71	R
14	+ 6.55	- 0.52	M	+ 9.81	- 3.63	D	7	- 1.82	+ 0.69	JWB	+ 7.31	+ 2.14	JH
15	+ 9.39	- 2.24	H	+ 7.88	- 1.80	R	8	+ 2.41	+ 1.22	E	+ 4.30	+ 2.18	R
16				+ 5.52	- 4.66	D	10				+ 5.57	+ 1.06	R
17				+ 5.00	- 6.99	R	11	+ 7.09	+ 1.00	WE	+ 14.64	- 1.81	E
18				+ 10.14	+ 2.49	D	12	+ 6.06	- 0.67	R	+ 8.50	- 0.99	D
19	+ 5.54	+ 4.56	JH	+ 3.91	+ 4.27	H	13	+ 7.52	+ 1.63	E	+ 9.27	- 1.45	JH
21				+ 2.42	+ 4.04	R	14				+ 9.68	+ 0.28	R
22	+ 2.72	+ 5.44	R	+ 2.01	+ 4.49	D	15	+ 6.07	+ 0.38	R	+ 5.89	- 4.51	E
23	+ 2.38	- 0.67	M				16				+ 4.63	+ 2.98	D
26				- 3.85	+ 5.90	D	17				+ 6.35	- 3.38	JH
June 1				+ 17.63	+ 0.36	R	18	+ 6.55	- 1.90	E	+ 6.87	- 5.64	R
2				+ 22.71	- 0.27	D	19				+ 7.28	- 4.80	H
4				+ 15.21	- 1.48	H	20	+ 12.93	- 5.67	H	+ 11.18	- 6.96	D
5				+ 11.90	- 6.10	R	21				+ 10.12	- 9.55	E
6				+ 9.05	- 7.52	E	22				+ 9.24	- 8.04	R
7				+ 10.46	- 3.14	D	23				+ 3.62	- 7.52	H
8				+ 9.93	- 7.02	E	24				+ 5.41	- 8.39	R
9				+ 10.17	+ 0.34	R	29				+ 36.19	- 2.24	R
12				+ 8.65	+ 0.06	E	31	+ 21.61	- 3.57	R	+ 25.12	+ 0.97	H
13	+ 8.71	- 0.22	JWB	+ 12.08	+ 3.68	R	Sep. 1				+ 18.33	+ 1.17	E
14	+ 8.16	+ 3.69	D	+ 8.10	+ 4.80	E	2				+ 8.39	- 0.58	R
16	+ 4.64	+ 2.42	E	+ 9.61	+ 0.98	D	3	+ 7.46	+ 0.28	E	+ 9.26	- 3.72	WE
17	+ 2.97	+ 2.45	H	- 0.09	- 0.67	E	5				+ 5.41	+ 0.69	E
18	+ 2.91	+ 0.11	WE	+ 2.44	+ 4.67	R	8	+ 2.19	+ 2.04	R	+ 3.50	+ 2.67	H
19				- 1.16	- 2.60	E	9	+ 6.86	+ 2.34	D	+ 8.93	- 3.15	E
20	+ 3.50	+ 3.94	E	+ 4.27	+ 4.02	R	10	+ 10.40	+ 1.17	H	+ 10.26	+ 0.32	R
22	+ 2.70	+ 1.74	R	+ 3.34	+ 3.33	R	11	+ 8.11	- 1.28	E	+ 12.08	- 1.34	D
23				+ 7.77	+ 6.94	H	12	+ 13.99	+ 1.22	R	+ 9.49	- 1.62	H
24				+ 4.04	+ 1.00	R	13	+ 13.61	- 0.13	D	+ 10.05	- 5.68	E
25				+ 3.52	+ 1.56	E	14	+ 10.75	- 0.63	H	+ 7.19	- 0.99	R
July 2				+ 24.31	+ 0.16	WE	15	+ 4.12	- 2.10	E	+ 10.26	- 4.42	D
3	+ 20.02	- 6.03	R				17	+ 8.68	- 5.01	R	+ 10.39	- 7.39	H
4				+ 17.11	- 3.48	D	18				+ 11.83	- 7.30	E
5				+ 8.34	- 0.38	R	21				+ 4.59	- 11.70	D
6				+ 6.07	+ 3.21	E	22				+ 12.34	- 13.77	E
7	+ 4.14	- 0.73	D				28				+ 40.45	- 0.28	E
9				+ 5.22	- 0.18	D	29				+ 27.77	+ 8.44	H
10	+ 4.12	+ 2.18	M	+ 6.51	- 0.23	R	30	+ 18.12	- 1.27	E	+ 18.42	+ 5.08	M
12	+ 6.93	+ 3.09	E	+ 11.03	+ 4.25	JWB	Oct. 2	+ 8.42	+ 1.12	E	+ 10.25	+ 3.39	M
13				+ 6.72	+ 1.45	D	3	+ 3.14	+ 3.42	R	+ 7.82	+ 5.69	H
14	+ 7.28	- 0.09	WE	+ 1.13	- 1.39	E	4	+ 3.93	+ 4.24	JH	+ 8.66	+ 3.27	E
15	+ 3.26	+ 1.17	D	+ 0.71	+ 1.01	H	5	+ 3.11	+ 3.31	M	+ 9.78	+ 3.01	R

ERRORS of the MOON'S TABULAR PLACE—concluded.

Day, 1851.	Errors from Observation with Transit-Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1851.	Errors from Observation with Transit-Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Oct. 6	"	"		"	"		Nov. 13	"	"		"	"	
7				+12.46	+5.14	H	14	+11.83	-6.53	H	+7.19	-0.98	H
8	+8.86	+4.53	J H	+7.77	+0.68	M	15	+9.76	-7.34	N	+16.18	-9.55	J W B
9				+17.27	-1.29	E	16	+15.10	-11.14	D	+9.77	-9.66	D
10	+20.70	+2.24	J H	+17.33	+1.52	H	17	+19.81	-10.49	E	+10.94	-13.24	E
11	+18.73	+0.17	H	+17.59	-3.23	E	18				+12.18	-7.72	H
12				+23.77	-0.83	R	19				+10.62	-7.70	J H
13				+19.91	-6.10	E	25				+4.51	-5.24	D
14	+11.82	-4.62	J H	+14.69	+4.92	H	29	-4.48	+3.33	E	+19.87	+5.66	R
15	+4.19	-4.26	E	+14.75	-9.14	E	30	+0.87	+4.05	M	+2.45	+6.72	R
16	+9.04	-3.27	R	+12.67	-4.37	R					+3.16	+3.12	D
17	+17.34	-8.89	E	+6.30	-7.27	H	Dec. 2	+3.95	+3.41	D	+7.32	+5.87	W E
18	+12.60	-7.93	M	+6.41	-12.15	M	3				+5.58	+9.34	H
19				+19.46	-11.27	H	4				+13.98	+1.24	D
26				+12.85	-12.05	R	5	+3.19	-6.51	H	+11.21	-1.00	R
29				+43.55	+7.61	E	7	+11.46	-1.95	M	+15.23	-3.06	H
30	+7.41	+5.29	R	+16.07	+4.22	D	8	+10.05	-2.99	R	+21.37	-5.07	D
				+11.59	+7.13	W E	9				+17.70	-2.60	W E
Nov. 1	+2.30	+5.76	W E	-2.41	+7.19	R	10	+14.01	-3.07	D	+19.44	-10.02	R
2	+3.95	+7.12	H	+6.13	+6.77	D	11	+9.40	-2.85	H	+13.89	-10.47	W E
3	+4.79	+5.78	R	+7.73	+4.51	W E	13				+15.50	-10.66	D
4	+7.79	+5.71	D	+6.37	+5.23	H	18				+19.03	-3.24	H
6	+8.84	+0.57	H	+11.16	+7.67	D	26				+1.20	+6.54	R
7	+9.63	+0.07	R	+19.00	-1.91	E	28				+5.47	+6.80	R
10				+18.47	-0.99	D	30	-1.22	-0.59	R	+1.30	-1.50	J H
11				+16.97	-1.84	J H	31				-0.26	-1.37	H
12				+8.10	-5.79	E							

December 13. Altazimuth. These results are obtained from two wires of an azimuth observation, and four of an altitude observation.

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS

OF

THE DURATION OF TRANSIT

OF

THE MOON'S DIAMETER,

WITH THE

NORTH EQUATOREAL.

1851.

Month and Day, 1851.	Object Observed.	I.	II.	III.	IV.	V. Wire.	Mean of Wires.	Difference of Times of Transit of Limbs.	Observer.
February 15		s	s	s	s	h m s	h m s	m s	H
	1 L.	55.5	5.6	16.0	26.5	8. 45. 37.0	8. 45. 16.12	} 2. 25.38	
	2 L.	20.6	31.0	41.4	51.8	8. 48. 2.7	8. 47. 41.50		
	1 L.	59.6	10.0	20.0	30.7	8. 49. 41.0	8. 49. 20.26	} 2. 25.22	
	2 L.	24.6	34.6	45.6	56.0	8. 52. 6.6	8. 51. 45.48		
	1 L.	0.0	10.1	21.0	31.5	8. 53. 41.8	8. 53. 20.88	} 2. 25.40	
	2 L.	25.5	36.0	46.2	56.7	8. 56. 7.0	8. 55. 46.28		
	1 L.	54.6	5.0	15.7	26.0	8. 57. 36.7	8. 57. 15.60	} 2. 25.38	
	2 L.	20.4	30.4	41.0	51.5	9. 0. 1.6	8. 59. 40.98		
	1 L.	31.6	42.0	52.0	3.0	9. 2. 13.1	9. 1. 52.34	} 2. 25.30	
	2 L.	56.7	7.0	17.6	28.1	9. 4. 38.8	9. 4. 17.64		
	1 L.	25.6	35.8	46.5	56.9	9. 6. 7.6	9. 5. 46.48	} 2. 25.28	
2 L.	50.8	1.0	11.7	22.5	9. 8. 32.8	9. 8. 11.76			

A correction of $+0^s.02$ is applied, in the mean of the observed diameters given below, for defect of illumination.

The following Result is obtained, considering the Clock to be about $1^m.50^s$ slow.

Day of Observation, 1851.	Observed Mean Duration of Transit.	Approximate Sidereal Time.	Tabular Duration of Transit.	Apparent Error of Tables.
February 15	m s 2.25.35	h m 8.58	m s 2.24.90	s - 0.45

ROYAL OBSERVATORY, GREENWICH.

ECLIPSES, OCCULTATIONS, AND TRANSITS

OF

JUPITER'S SATELLITES,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1851.

ECLIPSES, OCCULTATIONS, AND TRANSITS OF JUPITER'S SATELLITES, 1851.

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instrument.	Clock, or Chronometer.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Mean Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>m s</small>
Jan. 17	II	Ecl. disap..		R	E. Eq.	Earn.	12. 21. 50.0	12. 22. 15.2	12. 21. 51.52	16. 33. 53.53	16. 33. 56.8	+ 3.27
Jan. 23	I	Ecl. disap..		D	N. Eq.	A ¹	11. 25. 37.0	11. 26. 39.2	11. 27. 19.76	15. 15. 55.24	15. 15. 14.1	- 41.14
	I	Ecl. disap..		R	E. Eq.	Earn.	11. 26. 3.0	11. 26. 41.4	11. 27. 21.96	15. 15. 57.43	15. 15. 14.1	- 43.33
Jan. 24	II	(a) Ecl. disap..		D	Altaz.	G ¹	15. 23. 15.0	15. 23. 0.5	15. 23. 41.61	19. 7. 42.46	19. 7. 14.1	- 28.36
Feb. 8	I	Ecl. disap..		E	N. Eq.	A ¹	10. 42. 55.0	10. 43. 38.0	10. 44. 26.31	13. 30. 14.26	13. 30. 9.7	- 4.56
Feb. 8	III	Ecl. disap..		D	E. Eq.	Earn.	14. 56. 55.0	14. 57. 7.0	14. 57. 55.42	17. 43. 1.85	17. 40. 44.4	- 2.17.45
Feb. 15	I	Ecl. disap..		R	46 in. Ach.	Hardy	13. 5. 5.0	13. 5. 5.0	13. 5. 59.66	15. 23. 53.07	15. 23. 31.0	- 22.07
Mar. 26	I	Ecl. disap..		R	46 in. Ach.	Hardy	14. 2. 53.0	14. 2. 53.0	14. 3. 16.42	13. 47. 40.08	13. 47. 54.8	+ 14.72
Apr. 13	I	(b) Ecl. reap...		W E	N. Eq.	A ¹	10. 7. 36.0	10. 7. 32.2	10. 8. 11.99	8. 42. 27.83	8. 41. 27.3	- 1. 0.53
Apr. 28	I	Egress	Central bisect.	D	E. Eq.	Earn.	11. 34. 0.0	11. 34. 9.0	11. 34. 58.09	9. 10. 1.10	9. 13.	
		Egress	Last contact	D	E. Eq.	Earn.	11. 36. 45.0	11. 36. 54.0	11. 37. 43.09	9. 13. 45.65	9. 13.	
Apr. 28	III	Occult. im..	First contact	D	E. Eq.	Earn.	13. 45. 0.0	13. 45. 9.0	13. 45. 58.15	11. 20. 39.71	11. 22.	
			Totally imm.	D	E. Eq.	Earn.	13. 51. 0.0	13. 51. 9.0	13. 51. 58.15	11. 26. 38.72	11. 22.	
May 4	II	Ecl. reap...		M	E. Eq.	Earn.	12. 39. 3.0	12. 39. 31.2	12. 40. 23.55	9. 51. 40.41	9. 52. 43.5	+ 1. 3.09
		Ecl. reap...		JWB	N. Eq.	A ¹	12. 39. 36.7	12. 40. 1.6	12. 40. 53.95	9. 52. 10.72	9. 52. 43.5	+ 32.78
June 28	I	(c) Ecl. reap...		D	Altaz.	G ¹	17. 36. 5.0	17. 36. 18.0	17. 36. 39.10	11. 10. 52.33	11. 10. 21.9	- 30.43

(a) Not very good; daylight was coming on.

(b) The satellite appeared very near to the body of the planet: Jupiter was exceedingly tremulous.

(c) Of no value whatever: the planet was about 10° above the horizon, and the sky was also hazy; the satellites were very faint, and the time recorded can only be considered as approximate.

OCCULTATIONS OF STARS by the MOON.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock, or Chronometer.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
							<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>
Jan. 15	χ^s Orionis	Disap..	Dark	D	Altazimuth	G ¹	1. 16. 57.0	1. 16. 30.6	1. 17. 5.38	5. 38. 48.12
	68 Orionis	Disap..	Dark	E	N. Eq.	A ¹	5. 17. 51.0	5. 18. 26.0	5. 19. 0.85	9. 40. 3.95
Jan. 17	(a) θ Cancr.	Reap. .	Dark	R	E. Eq.	Earn.	11. 58. 30.0	11. 58. 55.2	11. 59. 31.30	16. 11. 36.95
Mar. 13	(b) d^1 Cancri	Disap..	Dark	D	Altazimuth	G ¹	8. 44. 10.0	8. 44. 55.0	8. 45. 6.72	9. 21. 29.28
	(c) d^1 Cancri	Disap..	Dark	E	N. Eq.	A ¹	8. 44. 49.0	8. 44. 55.0	8. 45. 6.72	9. 21. 29.28
	(d) θ Cancr.	Disap..	Dark	E	N. Eq.	A ¹	12. 33. 12.0	12. 33. 18.5	12. 33. 30.39	13. 9. 15.54
April 6	m Tauri	Disap..	Dark	R	E. Eq.	Earn.	9. 7. 37.0	9. 7. 47.4	9. 8. 21.22	8. 10. 18.21
Sep. 14	{ μ Ceti. } { B. A. C. 845. }	Reap. .	Dark	R	Altazimuth	G ¹	22. 49. 52.0	22. 50. 31.2	22. 50. 45.70	11. 17. 26.56

(a) Very faint: doubtful.

(c) Very good.

(b) Very good: the star disappeared instantaneously at the clock beat.

(d) Also very good.

Disappearance of χ^3 Orionis, 1851, January 15, $5^h.38^m.48^s.12 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$19.16.21.30$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$87.47.36.15$	$+ x$	$+ 0.6447$	$\times t$
Moon's N. P. D.	$69.47.40.17$	$+ y$	$- 0.0528$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$59.59.30$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.20.78$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$88.39.42.00$	$+ e''$		
Star's N. P. D.	$70.18.51.90$	$+ f$	$''$	$''$
Geocentric R. A. of corresponding point in arc....	$88.2.19.64$	$+ e$	$+ 0.0591$	$\times t - 2.2424 \times m$
Geocentric N. P. D. of corresponding point.....	$69.39.23.05$	$+ f$	$+ 0.0496$	$\times t - 2.3689 \times m$

Geocentric distance of center from corresponding point,

$$16.6.41 + 0.8044 \times \left\{ + e - x - 0.5856 \times t - 2.2424 \times m \right\} \\ - 0.5138 \times \left\{ f + 0.0496 \times t - 2.3689 \times m \right\} \\ + 0.5150 \times \left\{ y - 0.0528 \times t \right\}$$

Final Equation.

$$+ 14''.37 = + 0.8044 \times e - 0.5138 \times f - 0.8044 \times x + 0.5150 \times y - 0.5238 \times t - 0.5867 \times m - 0.9808 \times n$$

Disappearance of 68 Orionis 1851, January 15, $9^h.40^m.3^s.95 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	$79.45.12.75$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc.....	$90.23.36.90$	$+ x$	$+ 0.6494$	$\times t$
Moon's N. P. D.	$69.35.51.12$	$+ y$	$- 0.0435$	$\times t$
Moon's Horizontal Equatoreal Parallax.....	$60.7.09$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	$16.22.91$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	$90.48.8.25$	$+ e''$		
Star's N. P. D.....	$70.11.4.50$	$+ f$	$''$	$''$
Geocentric R. A. of corresponding point in arc....	$90.40.28.15$	$+ e$	$+ 0.1653$	$\times t - 0.4601 \times m$
Geocentric N. P. D. of corresponding point.....	$69.39.31.01$	$+ f$	$+ 0.0102$	$\times t - 1.8935 \times m$

Geocentric distance of center from corresponding point,

$$16.13.17 + 0.9132 \times \left\{ + e - x - 0.4841 \times t - 0.4601 \times m \right\} \\ + 0.2268 \times \left\{ f + 0.0102 \times t - 1.8935 \times m \right\} \\ - 0.2252 \times \left\{ y - 0.0435 \times t \right\}$$

Final Equation.

$$+ 9''.74 = + 0.9132 \times e + 0.2268 \times f - 0.9132 \times x - 0.2252 \times y - 0.4300 \times t - 0.8497 \times m - 0.9829 \times n$$

Reappearance of θ Cancri, 1851, January 17, 16^h. 11^m. 36^s.95 + t °, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	179. 52. 49.50	"	+	15.0	$\times t$
Moon's Right Ascension in arc.....	126. 35. 4.05	+	x	+	0.6624 $\times t$
Moon's N. P. D.	70. 54. 32.87	+	y	+	0.0923 $\times t$
Moon's Horizontal Equatoreal Parallax	61. 10.01	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16. 40.05	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	125. 46. 32.85	+	e''		
Star's N. P. D.	71. 24. 27.50	+	f		
Geocentric R. A. of corresponding point in arc....	126. 19. 17.81	+	e	+	0.0999 $\times t$ + 1.9650 $\times m$
Geocentric N. P. D. of corresponding point	70. 46. 29.73	+	f	-	0.0418 $\times t$ - 2.2778 $\times m$

Geocentric distance of center from corresponding point,

$$16.56.05 + 0.8310 \times \left\{ -e + x + 0.5625 \times t - 1.9650 \times m \right\} \\ - 0.4748 \times \left\{ f - 0.0418 \times t - 2.2778 \times m \right\} \\ + 0.4762 \times \left\{ y + 0.0923 \times t \right\}$$

Final Equation.

$$-16''.00 = -0.8310 \times e - 0.4748 \times f + 0.8310 \times x + 0.4762 \times y + 0.5312 \times t - 0.5514 \times m - 1.0000 \times n$$

Disappearance of d_1 Cancri, 1851, March 13, 9^h. 21^m. 29^s.28 + t °, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc.....	131. 16. 40.80	"	+	15.0	$\times t$
Moon's Right Ascension in arc.....	123. 38. 58.35	+	x	+	0.6402 $\times t$
Moon's N. P. D.	70. 25. 18.47	+	y	+	0.0796 $\times t$
Moon's Horizontal Equatoreal Parallax.....	60. 12.38	\times	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16. 24.39	\times	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	123. 42. 32.55	+	e''		
Star's N. P. D.	71. 11. 39.40	+	f		
Geocentric R. A. of corresponding point in arc....	123. 47. 47.27	+	e	+	0.1664 $\times t$ + 0.3147 $\times m$
Geocentric N. P. D. of corresponding point	70. 39. 16.98	+	f	-	0.0072 $\times t$ - 1.9424 $\times m$

Geocentric distance of center from corresponding point,

$$16.15.60 + 0.4820 \times \left\{ +e - x - 0.4738 \times t + 0.3147 \times m \right\} \\ + 0.8597 \times \left\{ f - 0.0072 \times t - 1.9424 \times m \right\} \\ - 0.8593 \times \left\{ y + 0.0796 \times t \right\}$$

Final Equation.

$$+ 8''.79 = +0.4820 \times e + 0.8597 \times f - 0.4820 \times x - 0.8593 \times y - 0.3030 \times t - 1.5182 \times m - 0.9844 \times n$$

Disappearance of θ Cancri, 1851, March 13, $13^h. 9^m. 15^s. 54 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$188. 22. 35. 85$	$''$	$+ 15. 0$	$\times t$
Moon's Right Ascension in arc	$126. 4. 46. 50$	$+ x$	$+ 0. 6401$	$\times t$
Moon's N. P. D.	$70. 44. 38. 41$	$+ y$	$- 0. 0889$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 18. 69$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	$16. 26. 12$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$125. 46. 32. 40$	$+ e''$		
Star's N. P. D.	$71. 24. 26. 60$	$+ f$		
Geocentric R. A. of corresponding point in arc ...	$126. 21. 56. 02$	$+ e$	$+ 0. 0772 \times t$	$+ 2. 1236 \times m$
Geocentric N. P. D. of corresponding point	$70. 45. 30. 39$	$+ f$	$- 0. 0449 \times t$	$- 2. 3362 \times m$

Geocentric distance of center from corresponding point,

$$16. 13. 35 + 0. 9428 \times \left\{ + e - x - 0. 5629 \times t + 2. 1236 \times m \right\} \\ + 0. 0542 \times \left\{ f - 0. 0449 \times t - 2. 3362 \times m \right\} \\ - 0. 0526 \times \left\{ y - 0. 0889 \times t \right\}$$

Final Equation.

$$+ 12''. 77 = + 0. 9428 \times e + 0. 0542 \times f - 0. 9428 \times x - 0. 0526 \times y - 0. 5284 \times t + 1. 8755 \times m - 0. 9861 \times n$$

Disappearance of m Tauri, 1851, April 6, $8^h. 10^m. 18^s. 21 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$137. 5. 18. 30$	$''$	$+ 15. 0$	$\times t$
Moon's Right Ascension in arc	$74. 56. 28. 35$	$+ x$	$+ 0. 5733$	$\times t$
Moon's N. P. D.	$70. 56. 48. 20$	$+ y$	$- 0. 0903$	$\times t$
Moon's Horizontal Equatoreal Parallax	$57. 7. 96$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	$15. 34. 15$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$74. 39. 31. 80$	$+ e''$		
Star's N. P. D.	$71. 33. 42. 10$	$+ f$		
Geocentric R. A. of corresponding point in arc ...	$75. 12. 58. 04$	$+ e$	$+ 0. 0735 \times t$	$+ 2. 0062 \times m$
Geocentric N. P. D. of corresponding point	$70. 56. 45. 83$	$+ f$	$- 0. 0427 \times t$	$- 2. 2163 \times m$

Geocentric distance of center from corresponding point,

$$15. 35. 47 + 0. 9452 \times \left\{ + e - x - 0. 4998 \times t + 2. 0062 \times m \right\} \\ - 0. 0017 \times \left\{ f - 0. 0427 \times t - 2. 2163 \times m \right\} \\ + 0. 0033 \times \left\{ y - 0. 0903 \times t \right\}$$

Final Equation.

$$- 1''. 32 = + 0. 9452 \times e - 0. 0017 \times f - 0. 9452 \times x + 0. 0033 \times y - 0. 4726 \times t + 1. 9001 \times m - 0. 9342 \times n$$

Reappearance of $\left\{ \begin{smallmatrix} \mu \text{ Ceti} \\ \text{B. A. C. 845} \end{smallmatrix} \right\}$, 1851, September 14, $11^h.17^m.26^s.56 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$342.41.25.50$	$''$	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$39.0.10.80$	$+ x$	$+ 0.4844$	$\times t$
Moon's N. P. D.	$79.52.59.16$	$+ y$	$- 0.1684$	$\times t$
Moon's Horizontal Equatoreal Parallax	$54.48.64$	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	$14.56.19$	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	$39.13.55.05$	$+ e''$		
Star's N. P. D.	$80.30.54.40$	$+ f$		
Geocentric R. A. of corresponding point in arc	$38.44.55.67$	$+ e + 0.0815 \times t - 1.7394 \times m$		
Geocentric N. P. D. of corresponding point	$79.51.56.15$	$+ f + 0.0196 \times t - 2.3383 \times m$		

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &15.3.08 + 0.9820 \times \left\{ -e + x + 0.4029 \times t + 1.7394 \times m \right\} \\
 &\quad - 0.0694 \times \left\{ f + 0.0196 \times t - 2.3383 \times m \right\} \\
 &\quad + 0.0702 \times \left\{ y - 0.1684 \times t \right\}
 \end{aligned}$$

Final Equation.

$$-6''.89 = -0.9820 \times e - 0.0694 \times f + 0.9820 \times x + 0.0702 \times y + 0.3824 \times t + 1.8704 \times m - 0.8962 \times n$$

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF DISTANCE AND ANGLE OF POSITION

OF THE

COMPONENTS OF γ VIRGINIS;

AND OF THE

DIAMETERS OF THE PLANET JUPITER,

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE TELESCOPE OF THE EAST EQUATOREAL.

1851.

RESULTS of MEASURES of DISTANCE and ANGLE of POSITION, for each Day's Observations of the COMPONENTS of γ VIRGINIS, observed at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the East Equatoreal.

$$\gamma \text{ VIRGINIS. } \begin{cases} \text{R. A.} = 12^{\text{h}}. 34^{\text{m}}. \\ \text{N. P. D.} = 90^{\circ}. 37'. \end{cases}$$

Day and Mean Solar Hour.	Observed Distance.	Method of Observation.	Number of Measures.	Observed Angle of Position.	Number of Measures.	Observer.	Remarks.
1851. ^d ^h May 8. 8	" 2.98	Equal distances	10	179. 7	1	M	
May 15. 8	3.09	Equal distances	10	175. 22	1	M	
May 17. 8	3.05	Equal distances	10	174. 25	1	M	

MEASURES of the DIAMETERS of JUPITER, made at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the East Equatoreal.

JUPITER.

Day and Mean Solar Hour.	Part Measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from Struve's Elements.	Apparent Error of Struve's Elements.	Approximate Angle of Position of measured Part.	Observer.	Remarks.
1851. ^d ^h May 15. 9	Equatoreal diameter . .	8	43.14	42.98	-0.16	114	M	Correction applied for phase of equatoreal diameter = 0".15. $\epsilon = \frac{1}{15.1}$
	Polar diameter	8	40.29	39.85	-0.44	204		
May 17. 6	Equatoreal diameter . .	8	42.83	42.80	-0.03	112	M	Correction applied for phase of equatoreal diameter = 0".16. $\epsilon = \frac{1}{14.8}$
	Polar diameter	8	39.94	39.68	-0.26	202		
May 20. 9	Equatoreal diameter . .	8	42.67	42.51	-0.16	112	M	Correction applied for phase of equatoreal diameter = 0".18. $\epsilon = \frac{1}{14.8}$ Jupiter was not seen in a clear sky, but the images were good and steady.
	Polar diameter	8	39.79	39.41	-0.38	202		
May 31. 9	Equatoreal diameter . .	8	41.51	41.35	-0.16	111	M	Correction applied for phase of equatoreal diameter = 0".25. $\epsilon = \frac{1}{18.4}$
	Polar diameter	8	39.25	38.34	-0.91	201		



R E S U L T S

OF THE

ASTRONOMICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1852.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1852.)



ROYAL OBSERVATORY, GREENWICH.

C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES,

FOR 1852, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1852,

WITH THE ANNUAL VARIATIONS :

(The North Polar Distances being corrected for Discordance of Direct and Reflexion-Observations, and for Flexure of Telescope of the Transit-Circle :)

ALSO,

NEW CONSTANTS FOR STARS INCLUDED IN THE CATALOGUE,

NOT OBSERVED IN PRECEDING YEARS.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, FOR JAN. 1, 1852, OF STARS
OBSERVED IN THE YEAR 1852; WITH THE ANNUAL VARIATIONS.
(The N.P.D.'s being corrected for Discordance of Direct and Reflexion-Observations, and for Flexure of Telescope of the Transit-Circle.)

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
1	W. B. XXIII. 1242	1	0.80	0. 0. 14.09	+3.070	1		101. 57. 6.30	"	1	0.80	6.30	-20.06
2	W. B. XXIII. 1249	1	0.94	0. 0. 43.69	3.070	1		99. 38. 48.72		1	0.94	48.72	20.06
3	α Andromedæ	23	0.63	0. 0. 44.77	3.084	16		61. 43. 36.51		16	0.55	36.51	19.91
4	W. B. O. 60	2	0.74	0. 3. 43.09	3.075	2		77. 45. 58.91		2	0.74	58.91	20.05
5	γ Pegasi	27	0.72	0. 5. 37.16	3.082	17		75. 38. 22.52		17	0.74	22.52	20.04
6	*	1	0.75	0. 5. 53.10	3.067	1		95. 28. 13.60		1	0.75	13.60	20.05
7	W. B. O. 97	1	0.81	0. 6. 7.51	3.074	1		83. 53. 0.56		1	0.81	0.56	20.05
8	W. B. O. 102	1	0.94	0. 6. 27.29	3.063	1		102. 7. 38.20		1	0.94	38.20	20.05
9	W. B. O. 126	2	0.80	0. 7. 48.36	3.078	2		81. 4. 10.75		2	0.80	10.75	20.04
10	W. B. O. 128	3	0.82	0. 7. 55.05	3.080	3		77. 24. 13.52		3	0.82	13.52	20.04
11	W. B. O. 189	3	0.76	0. 11. 15.24	3.057	3		101. 46. 15.15		3	0.76	15.15	20.03
12	ε Ceti	6	0.80	0. 11. 53.23	3.060	6		99. 38. 40.62		6	0.80	40.62	19.98
13	Lalande 390	1	0.73	0. 13. 29.35	3.066	1		93. 43. 56.05		1	0.73	56.05	20.02
14	12 Ceti	9	0.80	0. 22. 29.19	3.063	9		94. 46. 31.96		9	0.80	31.96	19.95
15	W. B. O. 387	3	0.82	0. 23. 29.59	3.044	3		100. 54. 9.65		3	0.82	9.64	19.95
16	W. B. O. 389	2	0.81	0. 23. 35.14	3.044	2		100. 54. 2.41		2	0.81	2.41	19.95
17	*	1	0.66	0. 25. 10.99	3.075	1		88. 32. 41.56		1	0.66	41.56	19.93
18	13 Ceti	1	0.82	0. 27. 37.96	3.085	1		94. 24. 30.03		1	0.82	30.03	19.88
19	ε Andromedæ	6	0.73	0. 30. 44.68	3.154	9	3	61. 29. 33.24	32.35	12	0.76	33.02	19.67
20	α Cassiopeiæ	12	0.63	0. 32. 8.31	3.352	11	1	34. 16. 30.64	29.78	14	0.68	30.64	19.82
	α Cassiopeiæ S. P. ...					2		31.25					
21	β Ceti	19	0.79	0. 36. 9.46	3.013	15		108. 47. 59.57		15	0.77	59.57	19.83
22	B. A. C. 205	1	0.88	0. 37. 52.14	3.056	1		95. 26. 27.70		1	0.88	27.70	19.71
23	η Cassiopeiæ	1	0.96	0. 40. 10.81	3.563	2		32. 58. 15.40		2	0.95	15.40	19.27
24	δ Piscium	3	0.64	0. 41. 0.43	3.107	3		83. 13. 17.05		3	0.67	17.05	19.73
25	20 Ceti	3	0.64	0. 45. 26.75	3.064	3		91. 56. 57.06		3	0.67	57.06	19.67
26	μ Andromedæ	6	0.95	0. 48. 33.26	3.301	7	1	52. 18. 15.93	15.81	8	0.96	15.92	19.68
27	ε Piscium	5	0.66	0. 55. 15.92	3.114	4		82. 54. 28.04		4	0.81	28.04	19.50
28	e Piscium	4	0.57	1. 0. 44.88	3.083	4		85. 8. 3.08		4	0.57	3.08	19.17
29	β Andromedæ	3	0.84	1. 1. 27.45	3.336	3		55. 9. 55.49		3	0.84	55.49	19.27
30	33 Ceti	3	0.79	1. 2. 56.78	3.083	3		88. 20. 35.31		3	0.79	35.31	19.32
31	α ¹ Ursæ Minoris ...			1. 5. (10)		1		1. 29. 2.40		3	0.57	2.75	19.25
	α ¹ Ursæ Minoris S. P.					2		2.92					
32	Polaris	128	0.43	1. 5. 36.75	17.826	66	12	1. 28. 46.42	46.15	162	0.49	46.49	19.26
	Polaris S. P.					75	9	46.62	46.35				
33	38 Ceti	2	0.87	1. 7. 15.94	3.056	2		91. 46. 2.09		2	0.87	2.09	19.41
34	f Piscium	2	0.82	1. 10. 10.04	3.090	2		87. 9. 57.69		2	0.82	57.69	19.12
35	42 Ceti	3	0.95	1. 12. 14.35	3.065	3		91. 17. 15.26		3	0.95	15.26	19.09
36	θ Ceti	18	0.61	1. 16. 37.58	3.000	10		98. 56. 54.46		10	0.48	54.46	18.74
37	μ Piscium	2	0.78	1. 22. 25.97	3.137	2		84. 37. 15.59		2	0.78	15.59	18.60
38	η Piscium	5	0.91	1. 23. 34.18	3.200	7	2	75. 25. 8.35	7.77	9	0.92	8.23	18.76
39	B. A. C. 474	1	0.01	1. 27. 25.82	3.617	1		42. 2. 6.16		1	0.01	6.16	18.57
40	B. A. C. 482	3	0.94	1. 28. 29.30	3.852	3		32. 46. 43.31		3	0.94	43.31	18.58
41	ν Piscium	6	0.82	1. 33. 43.96	3.117	6		85. 15. 46.57		6	0.82	46.57	18.38
42	54 Andromedæ	1	0.01	1. 34. 24.61	3.716	1		40. 3. 32.45		1	0.01	32.45	18.35
43	τ Ceti	1	0.02	1. 37. 11.52	2.788	1		106. 43. 6.86		1	0.02	6.86	19.15
44	ο Piscium	4	0.81	1. 37. 34.91	3.162	4		81. 35. 20.25		4	0.81	20.25	18.31
45	ε Sculptoris	2	0.88	1. 38. 42.86	2.819	2		115. 47. 38.41		2	0.88	38.41	18.24
46	g Persei	1	0.99	1. 42. 45.80	3.769	1		39. 56. 26.85		1	0.99	26.85	18.01
47	α Trianguli	3	0.87	1. 44. 39.35	+3.399	3		61. 8. 39.96		3	0.87	39.96	-17.80

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
48	β Arietis.....	7	0.90	^h 1. 46. 28.41	^s +3.297	7		[°] 69. 55. 3.93	"	7	0.90	3.93	—17.83
49	W. B. I. 986.....	5	0.87	1. 55. 8.73	3.045	4		92. 20. 17.53		4	0.88	17.53	17.58
50	α Arietis.....	24	0.57	1. 58. 50.40	3.363	22		67. 14. 23.65		22	0.49	23.65	17.28
51	β Trianguli.....	3	0.91	2. 0. 45.08	3.546	4		55. 42. 55.19		4	0.93	55.19	17.31
52	ξ^1 Ceti.....	3	0.58	2. 5. 9.56	3.169	1		81. 50. 59.32		1	0.75	59.32	17.11
53	67 Ceti.....	5	0.50	2. 9. 36.14	2.988	4		97. 6. 23.67		4	0.62	23.67	16.82
54	W. B. II. 158.....	1	0.88	2. 10. 51.45	3.166	1		82. 30. 17.75		1	0.88	17.75	16.87
55	B. A. C. 741.....	2	0.01	2. 16. 36.28	3.191	2		80. 57. 30.83		2	0.01	30.83	16.51
56	ξ Arietis.....	1	0.01	2. 16. 53.24	3.205			80. 4.					
57	B. A. C. 755.....	2	0.92	2. 18. 49.64	3.207	3		80. 6. 13.52		3	0.84	13.52	16.37
58	W. B. II. 306.....	1	0.91	2. 18. 52.30	3.203	1		80. 5. 11.22		1	0.91	11.22	16.49
59	ξ^2 Ceti.....	4	0.86	2. 20. 17.75	3.182	3		82. 12. 22.30		3	0.82	22.30	16.42
60	75 Ceti.....	1	0.06	2. 24. 37.59	3.051			91. 41.					
61	W. B. II. 417.....	3	0.93	2. 25. 8.19	3.171	3		82. 46. 5.46		3	0.93	5.46	16.17
62	B. A. C. 789.....	1	0.02	2. 27. 14.53	3.168			83. 11.					
63	79 Ceti.....	1	0.06	2. 27. 54.70	3.005			94. 12.					
64	B. A. C. 793.....	1	0.78	2. 27. 58.44	3.276	1		83. 49. 21.13		1	0.78	21.13	17.32
65	8 Ceti.....	2	0.03	2. 31. 54.04	3.074	1		90. 18. 46.39		1	0.01	46.39	15.78
66	35 Arietis.....	1	0.94	2. 34. 46.59	3.499	2		62. 55. 35.24		2	0.92	35.24	15.67
67	γ Ceti.....	25	0.58	2. 35. 38.15	3.101	21		87. 23. 26.16		21	0.50	26.16	15.44
68	π Ceti.....	3	0.86	2. 37. 4.74	2.851	2		104. 29. 17.84		2	0.83	17.84	15.51
69	40 Arietis.....	1	0.06	2. 40. 13.72	3.349			72. 20.					
70	41 Arietis.....	2	0.47	2. 41. 17.08	3.510	2		63. 21. 11.53		2	0.47	11.53	15.20
71	B. A. C. 892.....	1	0.02	2. 44. 57.25	3.329			74. 7.					
72	B. A. C. 905.....	1	0.06	2. 48. 18.96	3.201			82. 13.					
73	η Eridani.....	1	0.03	2. 49. 12.00	2.928	1		99. 29. 24.77		1	0.03	24.77	14.62
74	λ Ceti.....	4	0.67	2. 51. 47.40	3.213	3		81. 41. 8.23		3	0.88	8.23	14.69
75	5 Eridani.....	1	0.06	2. 52. 12.84	3.023			93. 3.					
76	γ Persei.....	1	0.99	2. 54. 6.36	4.297	1		37. 4. 38.29		1	0.99	38.29	14.54
77	α Ceti.....	18	0.52	2. 54. 32.85	3.127	17		86. 29. 38.31		17	0.37	38.31	14.41
78	ρ^3 Eridani.....	1	0.06	2. 57. 0.32	2.943			98. 11.					
79	53 Arietis.....	1	0.02	2. 59. 6.93	3.362			72. 42.					
80	*	1	0.94	3. 1. 9.66	2.667	1		113. 1. 31.55		1	0.94	31.55	14.11
81	8 Arietis.....	3	0.35	3. 3. 10.46	3.418	3		70. 50. 12.34		3	0.35	12.34	14.00
82	94 Ceti.....	1	0.01	3. 5. 13.62	3.058			91. 45.					
83	ζ Eridani.....	1	0.03	3. 8. 38.74	2.910			99. 22.					
84	95 Ceti.....	1	0.01	3. 10. 48.31	3.065			91. 28.					
85	Lalande 6129.....	2	0.98	3. 11. 37.96	3.373	2		73. 2. 31.26		2	0.98	31.26	13.44
86	τ^1 Arietis.....	5	0.77	3. 12. 41.47	3.449	4		69. 23. 24.44		4	0.96	24.44	13.32
87	κ^2 Ceti.....	1	0.06	3. 13. 22.39	3.130			86. 52.					
88	α Persei.....	4	0.63	3. 13. 46.93	4.240	4		40. 40. 12.91		4	0.63	12.91	13.25
89	ξ Tauri.....	7	0.83	3. 19. 9.16	3.243	6		80. 47. 13.03		6	0.97	13.03	12.92
90	σ Tauri.....	3	0.03	3. 22. 19.32	3.272			79. 11.					
91	*	2	0.97	3. 23. 51.24	2.912	2		98. 37. 5.35		2	0.97	5.35	12.63
92	ι Tauri.....	1	0.01	3. 24. 35.94	3.238			81. 8.					
93	ϵ Eridani.....	1	0.99	3. 25. 57.72	2.826	1		99. 57. 43.88		1	0.99	43.88	12.43
94	10 Tauri.....	3	0.03	3. 29. 19.40	3.058			90. 4.					
95	12 Tauri.....	2	0.03	3. 32. 8.87	3.117			87. 26.					
96	\circ Persei.....	3	0.98	3. 35. 2.84	+3.733	5	2	58. 11. 5.87	4.92	7	0.98	5.60	—11.89

56, 60, 62, 63, 69, 71, 72, 75, 78, 79, 82, 83, 84, 87, 92. These results in R. A. depend on single observations with the Binocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
97	δ Eridani	1	0.03	3. 36. 9.91	+ 2.871			100. 16.	"			"	"
98	25 Eridani	1	0.01	3. 37. 22.62	3.056			90. 46.					
99	η Tauri	13	0.47	3. 38. 41.71	3.552	11		66. 21. 23.64		11	0.46	23.64	- 11.55
100	W. B. III. 758	1	0.96	3. 39. 29.36	2.879	1		99. 54. 20.84		1	0.96	20.84	11.54
101	W. B. III. 760	1	0.94	3. 39. 43.99	2.880	1		99. 50. 56.70		1	0.94	56.70	11.52
102	B. A. C. 1205	1	0.01	3. 44. 37.85	3.040			91. 36.					
103	32 Eridani	1	0.06	3. 46. 51.89	3.011			93. 24.					
104	32 Tauri	2	0.10	3. 48. 7.91	3.531	1		67. 57. 7.92		1	0.09	7.92	10.79
105	γ Eridani	10	0.70	3. 51. 7.56	2.796	11		103. 55. 58.30		11	0.64	58.30	10.59
106	λ Tauri	3	0.89	3. 52. 29.13	3.315	4	1	77. 55. 55.39	54.93	5	0.93	55.30	10.61
107	35 Eridani	2	0.04	3. 54. 2.27	3.034			91. 58.					
108	Rümker 1092	1	0.99	4. 0. 0.38	3.574	1		66. 31. 36.31		1	0.99	36.31	10.03
109	δ ¹ Eridani	3	0.09	4. 4. 38.62	2.922	3		97. 13. 36.65		3	0.09	36.65	9.74
110	W. B. IV. 124	1	0.99	4. 7. 3.34	3.129	1		87. 0. 32.32		1	0.99	32.32	9.49
111	ε ² Eridani	3	0.09	4. 8. 27.68	2.763	3		97. 53. 11.33		3	0.09	11.33	5.94
112	W. B. IV. 180	1	0.99	4. 9. 35.41	3.115	1		87. 50. 21.34		1	0.99	21.34	9.29
113	γ Tauri	2	0.07	4. 11. 22.57	3.407	2		74. 44. 2.46		2	0.07	2.46	9.14
114	ε ² Tauri	5	0.25	4. 15. 34.18	3.451	5		72. 54. 11.65		5	0.25	11.65	8.84
115	ε Tauri	7	0.36	4. 19. 58.81	3.494	7		71. 9. 8.42		7	0.36	8.42	8.47
116	θ ² Tauri	6	0.83	4. 20. 13.01	3.420	7	1	74. 27. 42.82	42.20	8	0.87	42.74	8.46
117	*	1	0.99	4. 26. 58.31	3.834	1		58. 9. 13.97		1	0.99	13.97	7.92
118	Aldebaran	28	0.43	4. 27. 25.98	3.433	25		73. 47. 33.75		25	0.35	33.75	7.71
119	τ Tauri	4	0.50	4. 33. 22.01	3.592	4		67. 19. 55.17		4	0.50	55.17	7.41
120	B. A. C. 1460	2	0.10	4. 36. 14.02	3.323			79. 8.					
121	μ Eridani	1	0.12	4. 38. 6.25	3.001			93. 32.					
122	9 Camelopardali (α)			4. 39. (20)		1	1	23. 54. 59.04	63.58	2	0.99	61.31	6.94
123	π ¹ Orionis	3	0.10	4. 41. 48.49	3.258			83. 18.					
124	δ ¹ Orionis	4	0.10	4. 44. 9.89	3.388	4		75. 59. 61.97		4	0.10	61.97	6.47
125	ω Eridani	2	0.10	4. 45. 37.48	2.946			95. 42.					
126	5 Orionis	1	0.11	4. 45. 39.83	3.125			87. 45.					
127	ι Aurigæ	3	0.69	4. 47. 21.79	3.895	5	2	57. 4. 25.22	24.80	7	0.58	25.10	6.25
128	δ Eridani	2	0.11	4. 49. 6.87	2.954			95. 25.					
129	π ² Orionis	1	0.08	4. 50. 52.71	3.111			88. 31.					
130	ε Aurigæ	1	0.01	4. 51. 21.52	4.291	1		46. 24. 6.55		1	0.01	6.55	5.93
131	ι Tauri	3	0.88	4. 54. 15.20	3.581	3		68. 37. 34.85		3	0.88	34.85	5.66
132	ψ Eridani	1	0.11	4. 54. 16.19	2.906			97. 24.					
133	ιι Orionis	1	0.09	4. 56. 7.09	3.424	1		74. 48. 24.14		1	0.09	24.14	5.49
134	μ Tauri	4	0.11	4. 58. 42.97	3.546	4		71. 33. 29.81		4	0.11	29.81	5.33
135	ε Leporis	4	0.77	4. 59. 11.79	2.538	4		112. 34. 24.28		4	0.77	24.28	5.22
136	66 Eridani	2	0.10	4. 59. 26.80	2.963			94. 52.					
137	β Eridani	1	0.01	5. 0. 34.58	2.948	1		95. 16. 54.72		1	0.01	54.72	5.07
138	*	5	0.65	5. 3. 12.07	3.711	5		63. 43. 31.33		5	0.65	31.33	4.92
139	ρ Orionis	1	0.08	5. 5. 33.20	3.135			87. 19.					
140	Capella	7	0.38	5. 5. 45.75	4.419	9	1	44. 9. 31.17	31.43	10	0.34	31.20	4.27
141	Rigel	18	0.34	5. 7. 25.65	2.880	11		98. 22. 35.90		11	0.31	35.90	4.55
142	*	2	0.99	5. 10. 24.76	3.666	2		65. 30. 43.93		2	0.99	43.93	4.31
143	*	1	0.15	5. 10. 36.82	3.711	1		63. 54. 3.28		1	0.15	3.28	4.29
144	B. A. C. 1648	1	0.10	5. 11. 41.94	3.761	1		62. 11. 52.35		1	0.10	52.35	4.14
145	Lalande 10056	2	0.98	5. 14. 56.04	+ 3.677	2		65. 11. 1.84		2	0.98	1.84	- 3.92

97, 98, 102, 103, 121, 126, 129, 132, 139. These results in R. A. depend only on single observations with the Binocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
146	β Tauri.....	15	0.24	5. 16. 56.40	+ 3.789	16	2	61. 31. 22.14	22.80	18	0.23	22.21	— 3.55
147	γ Orionis.....	3	0.43	5. 17. 11.69	3.220	3		83. 47. 18.92		3	0.43	18.92	3.71
148	*	1	0.09	5. 17. 55.60	3.725	1		63. 32. 58.72		1	0.09	58.72	3.66
149	δ Tauri.....	1	0.16	5. 18. 44.77	3.602	1		68. 11. 42.36		1	0.16	42.36	3.62
150	118 Tauri.....	1	0.10	5. 20. 9.91	3.690	1		64. 58. 30.10		1	0.10	30.10	3.40
151	*	1	0.09	5. 21. 51.01	3.728	1		63. 32. 6.92		1	0.09	6.92	3.32
152	δ Orionis.....	16	0.17	5. 24. 26.86	3.066	11		90. 24. 46.16		11	0.12	46.16	3.06
153	α Leporis.....	7	0.36	5. 26. 12.27	2.648	5		107. 55. 54.64		5	0.33	54.64	2.96
154	ϵ Orionis.....	15	0.21	5. 28. 42.32	3.044	16		91. 18. 2.62		16	0.20	2.62	2.72
155	ζ Tauri.....	3	0.66	5. 28. 48.10	3.585	3		68. 57. 9.69		3	0.66	9.69	2.72
156	*	1	0.07	5. 29. 44.18	3.733	1		63. 28. 25.39		1	0.07	25.39	2.65
157	Lalande 10669.....	1	0.18	5. 32. 23.66	3.734	1		63. 28. 1.53		1	0.18	1.53	2.42
158	ζ Orionis.....	4	0.12	5. 33. 17.55	3.030	4		92. 1. 30.10		4	0.12	30.10	2.33
159	α Columbæ.....	5	0.06	5. 34. 17.46	2.177	5		124. 9. 20.83		5	0.06	20.83	2.24
160	{ B. A. C. 1822 .. } { γ^1 Leporis .. }	1	0.15	5. 38. 16.48	2.513	2		112. 28. 27.72		2	0.57	27.72	1.91
161	γ^2 Leporis.....	5	0.17	5. 38. 17.67	2.500	6		112. 30. 0.76		6	0.30	0.76	1.55
162	130 Tauri.....	4	0.12	5. 38. 48.45	3.496	4		72. 19. 52.23		4	0.12	52.23	1.87
163	κ Orionis.....	1	0.01	5. 40. 44.20	2.846	1		99. 43. 36.88		1	0.01	36.88	1.66
164	B. A. C. 1851.....	1	0.09	5. 41. 53.24	3.308			80. 11.					
165	136 Tauri.....	1	0.01	5. 44. 1.72	3.771			62. 26.					
166	β Columbæ.....	2	0.12	5. 45. 44.54	2.109	2		125. 49. 41.31		2	0.12	41.31	1.52
167	*	1	0.16	5. 46. 26.11	3.735	1		63. 33. 11.27		1	0.15	11.27	1.19
168	α Orionis.....	29	0.27	5. 47. 9.64	3.247	30		82. 37. 30.38		30	0.30	30.38	1.12
169	139 Tauri.....	1	0.18	5. 48. 48.83	3.725	1		64. 4. 10.35		1	0.18	10.35	0.98
170	θ Aurigæ.....			5. 49. (40)		1	1	52. 48. 12.49	12.58	2	0.14	12.54	0.81
171	η Leporis.....	2	0.13	5. 49. 39.84	2.735	3		104. 11. 54.96		3	0.15	54.96	1.07
172	W. B. V. 1289.....	1	0.09	5. 50. 32.54	3.114			88. 11.					
173	B. A. C. 1924.....			5. 52. (40)		1		38. 25. 47.65		1	0.18	47.65	0.60
174	Rümker 1673.....	6	0.14	5. 54. 15.07	3.731	6		63. 43. 30.19		6	0.14	30.19	0.50
175	Rümker 1680.....	1	0.02	5. 54. 39.65	3.733	1		63. 39. 0.68		1	0.02	0.68	0.47
176	66 Orionis.....	1	0.09	5. 57. 9.01	3.169			85. 50.					
177	Rümker 1701.....	3	0.15	5. 57. 22.27	3.733	3		63. 39. 49.63		3	0.15	49.63	— 0.23
178	*	1	0.17	6. 0. 3.76	3.645	1		66. 47. 26.12		1	0.17	26.12	+ 0.01
179	Lalande 11684.....	6	0.14	6. 1. 41.74	3.724	6		63. 57. 44.11		6	0.14	44.11	0.15
180	Lalande 11714.....	3	0.12	6. 2. 33.48	3.724	4		63. 59. 18.92		4	0.12	18.92	0.22
181	η Geminorum.....	7	0.23	6. 5. 56.62	3.624	8	1	67. 27. 19.55	19.44	9	0.20	19.54	0.52
182	γ^1 Orionis.....	1	0.09	6. 6. 8.20	3.534			70. 48.					
183	Lalande 11854.....	2	0.18	6. 6. 16.32	3.705	2		64. 37. 38.12		2	0.19	38.12	0.55
184	κ^1 Orionis.....	1	0.08	6. 7. 26.22	3.374			77. 24.					
185	Lalande 11978.....	1	0.18	6. 9. 37.32	3.711	1		64. 24. 58.70		1	0.18	58.70	0.84
186	Lalande 11996.....	1	0.19	6. 10. 16.19	3.715	2		64. 15. 44.24		2	0.19	44.24	0.89
187	Rümker 1809.....	1	0.11	6. 10. 44.14	3.856	1		59. 34. 21.62		1	0.11	21.62	0.94
188	γ Monocerotis.....	1	0.08	6. 12. 35.09	2.893			97. 46.					
189	μ Geminorum.....	10	0.18	6. 14. 0.38	3.636	11		67. 24. 56.11		11	0.19	56.11	1.36
190	η Monocerotis.....	1	0.08	6. 19. 40.86	2.973			94. 16.					
191	*	1	0.18	6. 19. 50.98	3.698	1		64. 47. 41.27		1	0.18	41.27	1.73
192	*	1	0.18	6. 20. 4.46	3.696	1		64. 51. 37.20		1	0.18	37.20	1.75
193	ν Geminorum.....	1	0.24	6. 20. 10.57	3.566	1		69. 41. 57.73		1	0.24	57.73	1.79
194	*	1	0.18	6. 21. 13.01	+ 3.699	1		64. 45. 38.18		1	0.18	38.18	+ 1.85

164, 172, 176, 182, 184, 188, 190. These results in R. A. depend on single observations with the Binocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R.A. 1852, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
195	19 Geminorum.....	1	0.09	6. 23. 6.86	+3.455			74. 0.	"			"	"
196	12 Monocerotis	1	0.08	6. 24. 27.75	3.186			85. 3.					
197	*	1	0.01	6. 27. 32.12	3.677	1		65. 27. 17.90		1	0.01	17.90	+ 2.40
198	*	1	0.01	6. 28. 3.70	3.676	1		65. 29. 2.44		1	0.01	2.44	2.45
199	γ Geminorum.....	4	0.14	6. 29. 9.72	3.469	3		73. 28. 45.63		3	0.16	45.63	2.56
200	Cephei 51 (Hev.)...	5	0.33	6. 29. 33.58	30.684	8		2. 44. 42.65		12	0.31	42.94	2.69
	Cephei 51 (Hev.) S.P.					4		43.53					
201	15 Monocerotis	1	0.08	6. 32. 49.38	3.310			79. 58.					
202	B. A. C. 2189.....	2	0.14	6. 33. 28.63	3.078			89. 22.					
203	ε Geminorum.....	4	0.19	6. 34. 49.47	3.700	4		64. 43. 37.12		4	0.19	37.12	3.05
204	32 Geminorum.....	1	0.08	6. 37. 35.36	3.376			77. 9.					
205	Sirius	29	0.30	6. 38. 37.60	2.645	26		106. 30. 58.54		26	0.30	58.54	4.59
206	18 Monocerotis	1	0.10	6. 40. 8.66	3.137			87. 26.					
207	33 Geminorum.....	1	0.08	6. 41. 18.39	3.459			73. 38.					
208	θ Geminorum.....	3	0.10	6. 43. 1.75	3.963	4	1	55. 51. 56.08	57.45	5	0.13	56.35	3.78
209	κ Canis Majoris....	1	0.19	6. 45. 18.52	2.242	2		122. 20. 27.87		2	0.19	27.87	3.87
210	ε Geminorum.....	3	0.12	6. 46. 17.73	3.387			76. 38.					
211	♂ Canis Majoris....	3	0.18	6. 47. 59.43	2.492	3		114. 0. 8.73		3	0.18	8.73	4.16
212	μ Canis Majoris....	3	0.14	6. 49. 19.68	2.754	3		103. 51. 19.92		3	0.14	19.92	4.28
213	ι Canis Majoris....	1	0.11	6. 49. 32.16	2.676	1		106. 51. 58.14		1	0.11	58.14	4.28
214	B. A. C. 2280.....	2	0.15	6. 51. 20.44	3.455			73. 52.					
215	ε Canis Majoris....	11	0.14	6. 52. 48.56	2.360	11		118. 46. 24.20		11	0.14	24.20	4.57
216	B. A. C. 2304.....	1	0.08	6. 55. 12.22	3.303			80. 39.					
217	ζ Geminorum.....	4	0.30	6. 55. 19.70	3.567	7	3	69. 13. 1.94	2.63	10	0.29	2.15	4.80
218	22 Canis Majoris...	2	0.15	6. 55. 49.36	2.391	2		117. 43. 33.25		2	0.15	33.25	4.85
219	45 Geminorum.....	2	0.14	6. 59. 52.71	3.447			73. 50.					
220	τ Geminorum.....	4	0.18	7. 1. 43.97	3.831	4	1	59. 31. 1.65	2.10	5	0.18	1.76	5.40
221	*	2	0.18	7. 1. 57.08	3.529	2		70. 27. 16.33		2	0.18	16.33	5.36
222	*	2	0.18	7. 1. 58.37	3.529	2		70. 26. 8.53		2	0.18	8.53	5.36
223	δ Canis Majoris....	1	0.18	7. 2. 22.40	2.441	1		116. 9. 35.97		1	0.18	35.97	5.36
224	20 Monocerotis.....	1	0.10	7. 2. 52.47	2.985			94. 1.					
225	22 Monocerotis.....	1	0.19	7. 4. 18.47	3.069			90. 15.					
226	51 Geminorum.....	2	0.13	7. 4. 52.18	3.454	2		73. 35. 39.82		2	0.13	39.82	5.59
227	B. A. C. 2377.....			7. 7. (20)		1	1	8. 49. 4.56	4.70	2	0.08	4.63	5.78
228	24 Monocerotis.....	1	0.10	7. 7. 44.60	3.078			89. 55.					
229	δ Geminorum.....	23	0.20	7. 11. 16.83	3.596	22		67. 44. 59.71		22	0.23	59.71	6.15
230	ι Geminorum.....	5	0.17	7. 16. 31.78	3.742	6	1	61. 54. 45.20	45.84	7	0.17	45.29	6.65
231	η Canis Majoris....	4	0.20	7. 18. 14.58	2.372	4		119. 1. 1.57		4	0.20	1.57	6.72
232	Castor.....	27	0.24	7. 25. 9.00	3.841	20		57. 47. 31.40		20	0.25	31.40	7.36
233	W. B. VII. 898....	2	0.08	7. 29. 10.63	3.303	2		79. 22. 13.94		2	0.08	13.94	7.61
234	Procyon.....	44	0.28	7. 31. 33.22	3.146	33		84. 23. 58.14		33	0.27	58.14	8.85
235	*	1	0.06	7. 35. 10.01	3.294	1		79. 41. 25.30		1	0.06	25.30	8.09
236	κ Geminorum.....	3	0.61	7. 35. 30.46	3.634	3		65. 15. 6.69		3	0.61	6.69	8.17
237	Pollux.....	31	0.24	7. 36. 15.25	3.683	26		61. 37. 14.64		26	0.23	14.64	8.24
238	82 Geminorum.....	8	0.17	7. 39. 42.37	3.600	7		66. 29. 50.20		7	0.16	50.20	8.40
239	ξ Navis.....	6	0.13	7. 43. 4.17	2.527	6		114. 29. 29.05		6	0.13	29.05	8.70
240	B. A. C. 2605.....	1	0.11	7. 43. 19.98	3.491			70. 18.					
241	84 Geminorum.....	4	0.17	7. 44. 13.24	3.578	4		67. 17. 22.72		4	0.17	22.72	8.74
242	φ Geminorum.....	2	0.46	7. 44. 26.10	+ 3.688	2		62. 51. 20.23		2	0.46	20.23	+ 8.86

195, 196, 201, 204, 206, 207, 216, 224, 225, 228, 240. These results in R. A. depend on single observations with the Binoocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R.A. 1852, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852 Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
243	B. A. C. 2636.....	4	0·21	^h 7. 47. 28·87	^s +3·263	4		[°] 80. 44. 53·88	"	4	0·21	53·88	+ 9·19
244	14 Canis Minoris...	1	0·11	7. 50. 39·07	3·118			87. 23.					
245	6 Cancri	4	0·16	7. 54. 25·31	3·702	6	2	61. 47. 41·65	41·54	8	0·16	41·62	9·66
246	*	1	0·19	7. 55. 6·84	3·615	1		65. 5. 49·96		1	0·19	49·96	9·66
247	Lalande 15707.....	3	0·18	7. 55. 15·48	3·615	3		65. 4. 49·16		3	0·18	49·16	9·67
248	B. A. C. 2703.....	3	0·17	7. 57. 49·82	3·550	2		67. 7. 20·49		2	0·18	20·49	9·94
249	15 Argus	23	0·20	8. 1. 14·51	2·558	20		113. 52. 50·00		20	0·17	50·00	10·04
250	ζ ¹ Cancri.....	4	0·13	8. 3. 43·19	3·455	4		71. 54. 36·96		4	0·13	36·96	10·41
251	ζ ² Cancri.....	1	0·25	8. 3. 43·42	3·450	1		71. 54. 45·21		1	0·25	45·21	10·64
252	B. A. C. 2748.....	1	0·23	8. 4. 5·11	3·366			75. 33.					
253	{ B. A. C. 2774.. } { γ Puppis..... }	2	0·12	8. 7. 54·44	2·268	2		125. 27. 15·12		2	0·12	15·12	10·72
254	β Cancri	1	0·23	8. 8. 29·24	3·263			80. 22.					
255	λ Cancri	7	0·17	8. 11. 43·82	3·582	7		65. 30. 56·29		7	0·17	56·29	10·94
256	B. A. C. 2791.....	1	0·23	8. 12. 3·19	3·166			85. 35.					
257	{ γ Puppis..... } { B. A. C. 2795.. }	1	0·19	8. 13. 0·82	2·244			126. 12.					
258	δ ¹ Cancri	4	0·24	8. 14. 53·03	3·450	4		71. 11. 47·67		4	0·24	47·67	11·13
259	ρ ² Cancri (1 st star) ..	2	0·17	8. 17. 49·56	3·641	2		62. 35. 10·29		2	0·16	10·29	11·36
260	ρ ² Cancri (2 ^d star) ..	4	0·21	8. 17. 49·88	3·641	4		62. 35. 5·50		4	0·21	5·50	11·36
261	ν ¹ Cancri (1 st star) ..	4	0·18	8. 17. 51·14	3·585	4		64. 59. 0·57		4	0·18	0·57	11·53
262	ν ¹ Cancri (2 ^d star) ..	1	0·22	8. 17. 51·56	3·585	1		64. 58. 55·71		1	0·22	55·71	11·53
263	B. A. C. 2825.....	1	0·23	8. 18. 15·99	3·006			93. 25.					
264	ν ² Cancri.....	4	0·19	8. 19. 49·81	3·573	4		65. 22. 4·49		4	0·19	4·49	11·57
265	ν ³ Cancri.....	3	0·22	8. 22. 44·95	3·565	2		65. 25. 25·52		2	0·23	25·52	11·80
266	θ Cancri	1	0·99	8. 23. 9·05	3·435	1		71. 24. 31·94		1	0·99	31·94	11·77
267	η Cancri	3	0·27	8. 24. 8·64	3·486	6	4	69. 3. 35·98	35·28	10	0·21	35·70	11·82
268	32 Cancri	7	0·19	8. 24. 14·72	3·561	8		65. 24. 55·70		8	0·20	55·70	11·88
269	δ Hydrae	10	0·21	8. 29. 49·11	3·184	9		83. 47. 0·53		9	0·21	0·53	12·17
270	γ Cancri	5	0·34	8. 34. 42·84	3·488	5		68. 0. 10·32		5	0·36	10·32	12·50
271	*	5	0·24	8. 35. 23·23	4·017	5		47. 46. 15·96		5	0·24	15·96	12·58
272	Lalande 17161.....	3	0·24	8. 35. 23·83	4·017	3		47. 45. 56·30		3	0·24	56·30	12·58
273	δ Cancri	3	0·39	8. 36. 16·05	3·425	2		71. 18. 17·60		2	0·17	17·60	12·87
274	ε Hydrae	21	0·26	8. 38. 56·13	3·189	19		83. 2. 29·39		19	0·30	29·39	12·85
275	Lalande 17513.....	2	0·22	8. 45. 27·95	3·494	2		67. 8. 22·42		2	0·22	22·42	13·25
276	Lalande 17528.....	1	0·18	8. 45. 44·90	3·492	1		67. 13. 33·45		1	0·18	33·45	13·27
277	ρ ³ Cancri.....	3	0·25	8. 46. 47·18	3·612	3		61. 30. 40·56		3	0·25	40·56	13·38
278	Gr. (12 yr.) 789....	4	0·19	8. 48. 54·48	3·469	4		68. 5. 1·81		4	0·19	1·81	13·48
279	ι Ursae Majoris.....	5	0·25	8. 49. 3·22	4·148	5		41. 22. 51·76		5	0·25	51·76	13·78
280	α Cancri	5	0·23	8. 50. 23·24	3·293	4		77. 34. 20·38		4	0·13	20·38	13·60
281	B. A. C. 3076.....	1	0·25	8. 53. 41·43	3·190			83. 47.					
282	ν Cancri	5	0·41	8. 54. 4·60	3·525	7	2	64. 58. 5·44	5·01	9	0·33	5·34	13·88
283	Lalande 17818.....	2	0·20	8. 54. 14·12	3·465	2		67. 54. 7·07		2	0·20	7·07	13·82
284	ω Hydrae.....	1	0·25	8. 58. 10·86	3·169			84. 19.					
285	Lalande 17973.....	5	0·23	8. 59. 15·14	3·446	5		68. 23. 52·30		5	0·23	52·30	14·14
286	κ Cancri	6	0·26	8. 59. 43·65	3·262	6		78. 44. 21·68		6	0·26	21·68	14·13
287	ξ Cancri	3	0·71	9. 0. 50·42	3·466	4	1	67. 21. 33·57	32·62	5	0·51	33·38	14·20
288	79 Cancri	2	0·26	9. 1. 50·22	3·468	2		67. 24. 21·03		2	0·26	21·03	14·30
289	Lalande 18105.....	3	0·18	9. 3. 19·49	3·429	3		68. 58. 11·61		3	0·18	11·61	14·38
290	Gr. (12 yr.) 809....	5	0·23	9. 4. 16·43	+ 3·432	5		68. 43. 8·89		5	0·23	8·89	+ 14·44

244, 252, 254, 256, 263, 281, 284. These results in R. A. depend on single observations with the Binocular Eyepiece.

271, 272. Of the 8th and 9th magnitudes respectively.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
291	B. A. C. 3133.....	2	0.24	^h 9. ^m 4. ^s 28.88	+ 3.143			[°] 85. ['] 32.....	"			"	"
292	23 Hydræ.....	1	0.22	9. 9. 20.89	2.979			95. 44.....					
293	83 Cancri.....	10	0.23	9. 10. 42.77	3.361	9		71. 40. 12.48		9	0.23	12.48	+ 14.98
294	B. A. C. 3194.....	1	0.26	9. 14. 57.56	3.492			64. 11.....					
295	B. A. C. 3203.....	1	0.22	9. 15. 52.95	3.176			84. 9.....					
296	B. A. C. 3209.....	1	0.26	9. 17. 20.39	3.346			72. 47.....					
297	<i>k</i> Ursæ Majoris	1	0.28	9. 19. 48.37	4.831	4	4	26. 17. 42.89	42.77	8	0.29	42.83	15.31
298	29 Hydræ.....	1	0.22	9. 20. 0.01	2.942			98. 35.....					
299	α Hydræ.....	16	0.28	9. 20. 18.82	2.948	12		98. 1. 10.67		12	0.20	10.67	15.34
300	B. A. C. 3233.....	1	0.26	9. 21. 26.77	2.990			95. 25.....					
301	θ Ursæ Majoris	5	0.41	9. 22. 55.80	4.061	4		37. 39. 5.15		5	0.34	4.90	16.10
	θ Ursæ Majoris S. P.					1		2.90					
302	λ Leonis	2	0.96	9. 23. 16.06	3.441	1		66. 22. 54.52		1	0.99	54.52	15.58
303	ξ Leonis	3	0.22	9. 23. 57.80	3.245	2		78. 2. 51.46		2	0.10	51.46	15.64
304	33 Hydræ.....	1	0.25	9. 27. 9.59	2.997			95. 15.....					
305	7 Leonis.....	2	0.24	9. 27. 47.76	3.292			74. 58.....					
306	10 Leonis	1	0.25	9. 29. 23.55	3.176			82. 30.....					
307	ϵ Hydræ	1	0.25	9. 32. 17.91	3.072			90. 28.....					
308	ϕ Leonis	12	0.20	9. 33. 14.87	3.228	13		79. 26. 13.14		13	0.20	13.14	16.13
309	ψ Leonis	1	0.25	9. 35. 40.03	3.280			75. 18.....					
310	B. A. C. 3327.....	1	0.17	9. 36. 50.46	3.422	1		65. 50. 22.03		1	0.17	22.03	16.40
311	ϵ Leonis	18	0.31	9. 37. 26.52	3.425	18	1	65. 32. 48.91	48.34	19	0.26	48.88	16.34
312	B. A. C. 3336.....	1	0.25	9. 38. 21.60	3.171			82. 37.....					
313	μ Leonis	7	0.25	9. 44. 20.22	3.428	14	7	63. 17. 54.39	54.11	21	0.22	54.30	16.70
314	7 Sextantis	1	0.25	9. 44. 33.93	3.103			86. 51.....					
315	* N. P. D. 76°. 8' ..	3	0.29	9. 49. 11.03	3.249	2		76. 8. 30.78		2	0.28	30.78	16.88
316	* N. P. D. 76°. 3' ..	1	0.30	9. 50. 29.79	3.249	1		76. 3. 22.70		1	0.30	22.70	16.94
317	π Leonis	9	0.22	9. 52. 23.32	3.182	10	1	81. 14. 52.60	53.32	11	0.22	52.67	17.05
318	Regulus	32	0.36	10. 0. 29.15	3.203	27		77. 18. 41.50		27	0.31	41.50	17.38
319	37 Leonis	6	0.22	10. 8. 43.77	3.235	5		75. 32. 7.88		5	0.23	7.88	17.77
320	γ Leonis	7	0.37	10. 11. 48.41	3.322	9	3	69. 24. 42.71	42.74	12	0.22	42.72	18.01
321	23 Sextantis.....	1	0.32	10. 13. 23.39	3.106			86. 58.....					
322	42 Leonis	5	0.25	10. 13. 52.45	3.237	5		74. 16. 47.76		5	0.23	47.76	17.95
323	B. A. C. 3553.....	1	0.32	10. 16. 2.63	3.041			92. 54.....					
324	26 Sextantis	1	0.32	10. 19. 3.58	3.067			90. 14.....					
325	31 Leonis Minoris..	6	0.29	10. 19. 18.71	3.502	9	2	52. 32. 10.14	11.66	11	0.27	10.42	18.26
326	29 Sextantis.....	1	0.32	10. 21. 57.24	3.053			91. 59.....					
327	ρ Leonis	11	0.27	10. 25. 0.92	3.171	11		79. 55. 59.76		11	0.25	59.76	18.39
328	B. A. C. 3629.....			10. 28. (40)		1	1	8. 48. 13.10	13.00	2	0.16	13.05	18.50
329	33 Sextantis.....	1	0.32	10. 33. 52.46	3.057			90. 58.....					
330	34 Sextantis.....	12	0.26	10. 34. 58.83	3.105	12		85. 38. 41.51		12	0.26	41.51	18.70
331	<i>k</i> Leonis	6	0.24	10. 38. 34.73	3.188	9	2	75. 1. 30.53	32.89	11	0.25	30.96	18.90
332	<i>l</i> Leonis	3	0.27	10. 41. 28.43	3.163	6	3	78. 40. 22.16	23.44	9	0.30	22.59	18.88
333	<i>d</i> Leonis	4	0.32	10. 52. 54.96	3.104	4		85. 35. 19.97		4	0.32	19.97	19.25
334	α Ursæ Majoris	9	0.49	10. 54. 33.23	3.778	15	15	27. 27. 4.36	4.75	31	0.34	4.54	19.33
	α Ursæ Majoris S. P.					1		4.01					
335	χ Leonis	4	0.29	10. 57. 22.76	3.103	4		81. 51. 53.58		4	0.29	53.58	19.39
336	δ Leonis	15	0.43	11. 6. 13.87	3.207	13	5	68. 39. 58.84	58.45	18	0.31	58.73	19.64
337	θ Leonis	3	0.31	11. 6. 28.09	3.161	3		73. 45. 44.20		3	0.31	44.20	19.54
338	η Leonis	3	0.31	11. 8. 7.14	+ 3.149	3		75. 53. 9.39		3	0.31	9.39	+ 19.58

292, 294, 295, 296, 298, 300, 304, 306, 307, 309, 312, 314, 321, 323, 324, 326, 329. These results in R. A. depend only on single observations with the Binocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
339	δ Crateris	20	0.30	11. 11. 56.69	+ 2.995	18		103. 58. 41.63	"	18	0.29	41.63	+ 19.41
340	σ Leonis	2	0.30	11. 13. 30.29	3.099	2		83. 9. 37.18		2	0.32	37.18	19.66
341	ι Leonis	1	0.25	11. 16. 12.46	3.137	1		78. 39. 21.39		1	0.25	21.39	19.75
342	B. A. C. 3882.....	1	0.30	11. 17. 18.31	3.126			77. 45.....					
343	τ Leonis	9	0.27	11. 20. 19.52	3.091	9		86. 19. 44.71		9	0.27	44.71	19.78
344	W. B. XI. 349.....			11. 20. (20)		1		86. 21. 19.97		1	0.26	19.97	19.75
345	85 Leonis.....	1	0.30	11. 21. 59.09	3.138			73. 46.....					
346	88 Leonis.....	1	0.30	11. 24. 6.62	3.109			74. 49.....					
347	*	1	0.29	11. 26. 26.88	3.153	1		67. 10. 2.70		1	0.29	2.70	19.84
348	{ B. A. C. 3934 .. } 20 Crateris			11. 27. (20)		2		122. 2. 52.47		2	0.28	52.47	19.03
349	B. A. C. 3940.....	1	0.30	11. 28. 57.06	3.103			83. 4.....					
350	ν Leonis	7	0.31	11. 29. 22.33	3.074	7		90. 0. 24.31		7	0.31	24.31	19.87
351	B. A. C. 3955.....	1	0.31	11. 30. 50.07	3.074			91. 37.....					
352	B. A. C. 3962.....	1	0.30	11. 32. 49.37	3.084			88. 13.....					
353	B. A. C. 3971.....	1	0.31	11. 34. 33.23	3.060			84. 26.....					
354	ξ Virginis	7	0.27	11. 37. 39.23	3.097	7		80. 55. 9.51		7	0.27	9.51	20.00
355	ν Virginis	3	0.22	11. 38. 15.06	3.093	1		82. 38. 29.14		1	0.18	29.14	20.16
356	Α ¹ Virginis	4	0.31	11. 40. 18.50	3.092	3		80. 55. 57.13		3	0.33	57.13	20.00
357	β Leonis	20	0.36	11. 41. 30.48	3.066	21		74. 36. 3.23		21	0.38	3.23	20.08
358	β Virginis.....	3	0.27	11. 42. 59.21	3.128	2		87. 24. 4.74		2	0.25	4.74	20.28
359	{ B. A. C. 4010. . } Groomb. 1830. . }	5	0.30	11. 44. 26.15	3.488	5		51. 13. 13.24		5	0.30	13.24	25.71
360	γ Ursæ Majoris	7	0.40	11. 46. 1.39	3.198	5		35. 28. 56.86		6	0.42	56.76	20.03
	γ Ursæ Majoris S. P.					1		55.99					
361	B. A. C. 4020.....	1	0.31	11. 46. 17.82	3.085			92. 57.....					
362	* N. P. D. 65°. 22'. .	1	0.22	11. 46. 54.92	3.106	1		65. 21. 50.46		1	0.22	50.46	20.02
363	Lalande 22547.....	8	0.28	11. 51. 7.09	3.113	7		51. 17. 59.94		7	0.28	59.94	20.04
364	B. A. C. 4043.....	1	0.31	11. 51. 29.25	3.055			88. 39.....					
365	π Virginis.....	6	0.25	11. 53. 17.27	3.079	6		82. 33. 37.31		6	0.25	37.31	20.10
366	* N. P. D. 80°. 52'. .	1	0.34	11. 55. 46.26	3.075	1		80. 52. 26.71		1	0.34	26.71	20.05
367	ο Virginis	12	0.28	11. 57. 40.16	3.064	12		80. 26. 41.58		12	0.28	41.58	20.05
368	4 Comæ			12. 4. (20)		1	1	63. 18. 17.04	17.24	2	0.37	17.14	20.04
369	B. A. C. 4122.....			12. 8. (0)		1	1	18. 58. 33.96	33.61	2	0.23	33.79	20.04
370	Lalande 23048.....	1	0.29	12. 10. 55.26	3.061	1		81. 6. 46.53		1	0.29	46.53	20.03
371	* N. P. D. 81°. 9'. .	1	0.28	12. 12. 13.65	3.060	1		81. 9. 16.50		1	0.28	16.50	20.03
372	η Virginis.....	5	0.35	12. 12. 20.09	3.067	5		89. 50. 36.83		5	0.35	36.83	20.07
373	ε Virginis	1	0.18	12. 12. 50.05	3.049			85. 51. 46.37		1	0.18	46.37	20.09
374	6 Can. Venat.			12. 18. (30)		1	1	50. 9. 39.17	39.04	2	0.25	39.11	20.08
375	B. A. C. 4193.....	1	0.37	12. 19. 11.48	1.962	1	1	5. 44. 52.82	52.32	2	0.37	52.57	19.99
376	*	2	0.17	12. 20. 8.44	3.028	2		69. 49. 7.51		2	0.17	7.51	19.98
377	β Corvi	24	0.28	12. 26. 37.32	3.131	28		112. 34. 39.57		28	0.29	39.57	19.99
378	κ Draconis			12. 27. (10)		1	1	19. 23. 43.95	42.86	2	0.30	43.40	19.96
379	γ Virginis (S. Star).	4	0.34	12. 34. 9.46	3.040	5		90. 38. 14.20		5	0.34	14.20	19.85
380	γ Virginis (as one mass).	4	0.30	12. 34. 9.68	3.040	2		90. 38. 13.78		2	0.25	13.78	19.85
381	γ Virginis (N. Star)	2	0.32	12. 34. 9.69	3.040	5		90. 38. 10.69		5	0.34	10.69	19.85
382	35 Virginis.....	6	0.35	12. 40. 19.33	3.055	6		85. 37. 5.07		6	0.35	5.07	19.80
383	*	1	0.37	12. 46. 12.17	3.066	1		88. 50. 16.71		1	0.37	16.71	19.65
384	δ Virginis	6	0.32	12. 48. 8.97	3.023	6		85. 47. 49.10		6	0.32	49.10	+ 19.71
385	12 Can. Ven. (1st Star).	1	0.36	12. 49. 4.48	+ 2.821			50. 53.....					

366. Of the 11-12th magnitude.

371. Of the 10th magnitude.

342, 345, 346, 349, 351, 352, 353, 361, 364. These results in R. A. depend only on single observations with the Binoocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	E.				
386	12 Can. Ven. (2 ^d Star)	7	0.35	^h 12. 49. 5.78	+ 2.820	6		50. 52. 53.19	"	6	0.36	53.19	+ 19.54
387	41 Comæ	5	0.35	13. 0. 4.54	2.888	5		61. 34. 47.10		5	0.35	47.10	19.46
388	θ Virginis	8	0.31	13. 2. 17.41	3.101	6		94. 44. 51.16		6	0.33	51.16	19.37
389	β Comæ	1	0.37	13. 4. 57.88	2.811	1		61. 22. 13.42		1	0.37	13.42	18.35
390	Spica	42	0.43	13. 17. 24.09	3.149	38		100. 23. 13.83		38	0.42	13.83	18.95
391	B. A. C. 4515	1	0.34	13. 24. 10.84	3.037			91. 34.					
392	ζ Virginis	10	0.35	13. 27. 9.30	3.055	10		89. 50. 14.64		10	0.35	14.64	18.57
393	80 Virginis	1	0.34	13. 27. 49.69	3.114			94. 38.					
394	B. A. C. 4559	1	0.34	13. 32. 16.72	2.964			78. 30.					
395	o Virginis	1	0.34	13. 35. 37.62	3.012			85. 43.					
396	B. A. C. 4593	1	0.34	13. 39. 41.84	3.135			95. 58.					
397	τ Bootis	4	0.35	13. 40. 13.75	2.856	6	2	71. 48. 13.38	12.48	8	0.35	13.16	18.12
398	W. B. XIII. 720 ...	2	0.36	13. 41. 41.17	2.959	2		79. 11. 13.43		2	0.36	13.43	18.11
399	η Ursæ Majoris	4	0.43	13. 41. 42.25	2.376	4		39. 56. 47.24		4	0.43	47.24	18.14
400	B. A. C. 4621	1	0.34	13. 43. 2.63	2.866			70. 38.					
401	p Virginis	2	0.36	13. 47. 6.41	3.082	2		90. 46. 21.62		2	0.36	21.62	17.95
402	η Bootis	22	0.44	13. 47. 38.26	2.859	23	1	70. 51. 30.97	30.86	24	0.43	30.97	18.23
403	τ Virginis	8	0.36	13. 54. 7.01	3.050	8		87. 44. 13.33		8	0.36	13.33	17.69
404	95 Virginis	8	0.34	13. 58. 53.52	3.164	8		98. 36. 18.22		8	0.34	18.22	17.40
405	d Bootis			14. 3. (40)		1	1	64. 12. 19.50	17.70	2	0.42	18.60	17.27
406	κ Virginis	7	0.32	14. 5. 0.34	3.195	7		99. 34. 56.20		7	0.31	56.20	17.14
407	Arcturus	45	0.54	14. 8. 54.77	2.733	38		70. 2. 41.90		38	0.53	41.90	18.92
408	ρ Bootis	4	0.38	14. 25. 27.11	2.590	8	4	58. 58. 36.02	36.20	12	0.37	36.08	16.02
409	γ Bootis	4	0.43	14. 26. 7.08	2.429	4		51. 2. 32.39		4	0.43	32.39	15.98
410	5 Ursæ Minoris			14. 27. (50)		1	1	13. 38. 46.00	44.82	2	0.34	45.41	16.05
411	ζ Bootis	8	0.36	14. 34. 4.96	2.861	8		75. 38. 3.01		8	0.36	3.01	15.70
412	Lalande 26865	1	0.42	14. 36. 33.10	1.940	1		36. 43. 8.31		1	0.42	8.31	15.55
413	ε ¹ Bootis			14. 38. (30)		1		62. 17. 54.97		1	0.92	54.97	15.45
414	ε ² Bootis	36	0.47	14. 38. 31.45	2.622	28		62. 17. 57.30		28	0.48	57.30	15.45
415	8 Libræ	5	0.35	14. 42. 30.43	3.307	5		105. 22. 42.32		5	0.37	42.32	15.30
416	α Libræ	23	0.39	14. 42. 41.89	3.307	19		105. 25. 24.84		19	0.39	24.84	15.24
417	ξ ² Libræ	1	0.34	14. 48. 44.93	+ 3.245	1		100. 48. 30.86		1	0.34	30.86	14.90
418	β Ursæ Minoris	9	0.49	14. 51. 11.53	- 0.271	9	2	15. 14. 22.73	23.36	11	0.54	22.84	14.76
419	*	1	0.37	14. 51. 35.02	+ 3.226	1		99. 38. 55.42		1	0.37	55.42	14.69
420	δ Libræ	1	0.49	14. 53. 4.24	3.197			97. 56.					
421	ψ Bootis	7	0.39	14. 58. 6.30	2.572	7		62. 28. 21.69		7	0.39	21.69	14.30
422	ν ¹ Libræ	2	0.44	14. 58. 22.72	3.335	2		105. 40. 46.23		2	0.44	46.23	14.33
423	W. B. XV. 45	3	0.43	15. 3. 40.82	3.239	3		99. 56. 42.53		3	0.43	42.53	13.95
424	*	3	0.45	15. 6. 16.26	0.977	3		24. 53. 29.36		3	0.45	29.36	13.79
425	β Libræ	37	0.31	15. 9. 2.87	3.220	36		98. 49. 59.92		36	0.30	59.92	13.61
426	Oeltz. Arg. 15221 ..	2	0.45	15. 9. 8.62	1.039	2		25. 49. 23.11		2	0.53	23.11	13.60
427	Oeltz. Arg. 15222 ..	2	0.45	15. 9. 18.01	1.039	2		25. 47. 31.14		2	0.53	31.14	13.60
428	δ Bootis	1	0.44	15. 9. 32.20	2.421	1		56. 7. 50.61		1	0.44	50.61	13.67
429	μ ¹ Bootis	6	0.55	15. 18. 54.00	2.267	6		52. 6. 5.17		6	0.50	5.17	12.89
430	ζ ¹ Libræ	3	0.46	15. 19. 54.93	3.374	3		106. 11. 48.88		3	0.46	48.88	12.94
431	β Coronæ	4	0.44	15. 21. 43.70	2.480	7	3	60. 22. 53.25	52.69	10	0.47	53.08	12.71
432	B. A. C. 5099	1	0.45	15. 21. 49.02	3.381	1		106. 44. 29.75		1	0.45	29.75	12.79
433	α Coronæ	45	0.44	15. 28. 25.40	2.538	38		62. 47. 3.69		38	0.42	3.69	12.37
434	W. B. XV. 637	1	0.46	15. 33. 21.78	3.360			105. 5.					
435	W. B. XV. 644	2	0.45	15. 33. 43.15	+ 3.360	2		105. 5. 15.02		2	0.45	15.02	+ 11.95

391, 393, 394, 395, 396, 400. These results in R. A. depend only on single observations with the Binocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued*.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
436	B. A. C. 5184.....	3	0.46	^h 15. ^m 34. ^s 27.23	+3.353	4		105. 32. 6.06	"	4	0.45	6.06	+12.08
437	B. A. C. 5188.....	3	0.46	15. 35. 7.30	3.351	3		104. 33. 52.08		3	0.46	52.08	12.01
438	η Libræ.....	6	0.43	15. 35. 45.19	3.371	6		105. 11. 49.00		6	0.43	49.00	11.86
439	α Serpentis.....	34	0.43	15. 36. 58.85	2.951	29		83. 6. 19.30		29	0.42	19.30	11.65
440	B. A. C. 5240.....	2	0.46	15. 43. 5.18	3.694	2		119. 25. 56.54		2	0.46	56.54	11.43
441	W. B. XV. 838....	3	0.45	15. 43. 19.60	3.354	3		104. 24. 43.37		3	0.45	43.37	11.26
442	ε Serpentis.....	6	0.51	15. 43. 26.48	2.989	6		85. 4. 24.60		6	0.51	24.60	11.21
443	W. B. XV. 864....	2	0.45	15. 44. 59.92	3.353	2		104. 16. 5.21		2	0.45	5.21	11.14
444	B. A. C. 5254.....	3	0.47	15. 45. 7.86	3.556	3		113. 31. 59.00		3	0.47	59.00	11.15
445	θ Libræ.....	5	0.32	15. 45. 24.22	3.410	5		106. 17. 25.77		5	0.32	25.77	10.99
446	W. B. XV. 910....	3	0.48	15. 47. 56.82	+3.349	3		103. 57. 35.35		3	0.48	35.35	10.93
447	ζ Ursæ Minoris....	6	0.57	15. 49. 27.30	-2.326	6	1	11. 45. 9.66	8.51	7	0.56	9.50	10.81
448	γ Serpentis.....	5	0.52	15. 49. 37.19	+2.769	6		73. 51. 8.08		6	0.52	8.08	12.05
449	48 Libræ.....	3	0.44	15. 49. 54.43	3.349	3		103. 50. 54.58		3	0.53	54.58	10.78
450	δ Scorpïi.....	1	0.41	15. 51. 35.25	3.535	2		112. 11. 46.70		2	0.47	46.70	10.68
451	β ¹ Scorpïi.....	11	0.50	15. 56. 50.32	3.478	12		109. 23. 45.57		12	0.50	45.57	10.28
452	β ² Scorpïi.....			15. 56. (50)		1		109. 23. 31.22		1	0.48	31.22	10.36
453	ω ² Scorpïi.....	2	0.41	15. 58. 43.90	3.508	2		110. 27. 52.22		2	0.41	52.22	10.15
454	W. B. XV. 1118....	3	0.44	15. 58. 48.58	3.351	3		103. 40. 8.67		3	0.44	8.67	10.12
455	W. B. XV. 1144....	3	0.45	15. 59. 55.51	3.349	3		103. 32. 11.03		3	0.45	11.03	10.03
456	ν ¹ Scorpïi.....	3	0.47	16. 3. 22.95	3.482	3		109. 3. 38.92		3	0.47	38.92	9.90
457	ν ² Scorpïi.....	6	0.49	16. 3. 23.97	3.478	6		109. 4. 18.68		6	0.51	18.68	9.75
458	δ Ophiuchi.....	30	0.50	16. 6. 35.62	3.138	27		93. 18. 33.55		27	0.52	33.55	9.63
459	ε Ophiuchi.....	7	0.49	16. 10. 29.63	3.168	7		94. 19. 40.21		7	0.49	40.21	9.19
460	γ Herculis.....			16. 15. (20)		1	1	70. 29. 45.94	46.17	2	0.44	46.06	8.80
461	Antares.....	16	0.48	16. 20. 20.39	3.666	16		116. 5. 54.60		16	0.48	54.60	8.45
462	η Draconis.....	11	0.66	16. 21. 59.72	0.820	12	3	28. 8. 59.40	59.08	15	0.61	59.34	8.24
463	ρ Ophiuchi.....	1	0.49	16. 22. 40.33	3.430	1		106. 17. 7.91		1	0.49	7.91	8.30
464	ω Ophiuchi.....	1	0.51	16. 23. 22.22	3.546	1		111. 8. 43.87		1	0.51	43.87	8.13
465	λ Ophiuchi.....	1	0.52	16. 23. 27.03	3.027			87. 41.					
466	ζ Ophiuchi.....	8	0.49	16. 29. 0.82	3.299	8		100. 15. 46.61		8	0.49	46.61	7.73
467	{B. A. C. 5579....}	1	0.49	16. 33. 1.05	3.461	1		107. 27. 4.62		1	0.49	4.62	7.41
468	{24 Scorpïi.....}												
468	m ² Herculis.....	1	0.50	16. 33. 18.33	2.978			85. 29.					
469	39 Herculis.....	1	0.50	16. 35. 36.78	2.435			62. 48.					
470	ζ Herculis.....	7	0.55	16. 35. 42.47	2.265	19	11	58. 7. 34.87	34.53	30	0.52	34.75	6.79
471	41 Herculis.....	1	0.50	16. 37. 47.49	2.916			83. 37.					
472	B. A. C. 5625.....	1	0.50	16. 39. 26.46	3.016			87. 29.					
473	B. A. C. 5634.....	1	0.50	16. 41. 8.75	2.817			78. 36.					
474	21 Ophiuchi.....	1	0.50	16. 43. 54.79	3.042			88. 32.					
475	23 Ophiuchi.....	1	0.50	16. 46. 41.25	3.203			95. 54.					
476	54 Herculis.....	1	0.50	16. 48. 52.18	2.632			71. 20.					
477	κ Ophiuchi.....	11	0.54	16. 50. 39.95	2.838	11		80. 23. 28.45		11	0.54	28.45	5.96
478	B. A. C. 5726.....	1	0.50	16. 53. 16.76	2.917			83. 11.					
479	ε Herculis.....	5	0.60	16. 54. 37.70	2.294	13	8	58. 51. 9.37	9.94	21	0.55	9.59	5.58
480	B. A. C. 5732.....	1	0.50	16. 54. 49.54	2.723			74. 50.					
481	{B. A. C. 5749....}	1	0.50	16. 56. 21.16	+2.748			75. 41.					
481	{32 Ophiuchi.....}												
482	ε Ursæ Minoris....	10	0.58	17. 1. 18.74	-6.515	15	10	7. 43. 38.36	38.02	25	0.53	38.22	5.08
483	η Ophiuchi.....	6	0.52	17. 1. 53.62	+3.435	6		105. 32. 12.57		6	0.52	12.57	+4.91

437. Of the 8th magnitude.

468, 469, 471, 472, 473, 474, 475, 476, 478, 480, 481. These results in R. A. depend only on single observations with the Binocular Eyepiece.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
484	W. B. XVII. 12....	2	0.49	17. 2. 12.80	+ 2.977	2		85. 52. 23.42	"	2	0.49	23.42	+ 5.00
485	Oeltz. Arg. 16877 ..	2	0.46	17. 5. 5.50	1.120	3		33. 38. 31.00		3	0.46	31.00	4.76
486	A ¹ Ophiuchi.....	2	0.51	17. 6. 14.88	3.683	2		116. 22. 50.01		2	0.51	50.01	5.81
487	W. B. XVII. 106...	1	0.47	17. 7. 5.70	3.097	1		91. 10. 22.59		1	0.47	22.59	4.59
488	α ¹ Herculis	19	0.52	17. 7. 54.03	2.732	16		75. 26. 14.94		16	0.53	14.94	4.46
489	α ² Herculis.....			17. 7. (50)		1		75. 26. 17.41		1	0.57	17.41	4.53
490	δ Herculis	4	0.59	17. 8. 57.33	2.459	6	2	64. 58. 59.18	58.46	8	0.53	59.00	4.59
491	α Herculis	4	0.55	17. 11. 51.64	2.212	4		56. 44. 14.12		4	0.55	14.12	4.17
492	ν Serpentis	1	0.57	17. 12. 30.20	3.371	1		102. 41. 32.24		1	0.57	32.24	4.11
493	*	1	0.37	17. 12. 43.08	3.635	1		113. 18. 45.78		1	0.37	45.78	4.11
494	θ Ophiuchi	9	0.52	17. 12. 55.41	3.680	9		114. 50. 47.09		9	0.52	47.09	4.15
495	σ Ophiuchi	13	0.51	17. 19. 10.37	2.977	13		85. 43. 37.20		13	0.51	37.20	3.54
496	*	1	0.32	17. 24. 47.55	3.628	1		112. 52. 14.55		1	0.32	14.55	3.07
497	β Draconis	8	0.68	17. 27. 5.55	1.350	8		37. 35. 14.51		8	0.68	14.51	2.86
498	α Ophiuchi	36	0.48	17. 28. 3.96	2.780	32		77. 19. 42.63		32	0.47	42.63	2.98
499	58 Ophiuchi	1	0.50	17. 34. 33.82	3.594	1		111. 36. 19.12		1	0.50	19.12	2.15
500	β Ophiuchi	12	0.50	17. 36. 9.78	2.964	12		85. 22. 0.58		12	0.50	0.58	1.92
501	29 Draconis			17. 36. (50)		1	1	15. 41. 0.93	0.97	2	0.41	0.95	2.00
502	γ Ophiuchi	9	0.52	17. 40. 28.36	3.004	9		87. 13. 58.75		9	0.52	58.75	1.79
503	*	1	0.55	17. 47. 48.57	3.315	1		100. 21. 10.33		1	0.55	10.33	1.07
504	89 Herculis	4	0.59	17. 49. 26.99	2.425	4		63. 55. 24.12		4	0.59	24.12	0.89
505	γ Draconis	9	0.35	17. 53. 10.23	1.393	12		38. 29. 30.52		12	0.33	30.52	+ 0.63
506	72 Ophiuchi	4	0.59	18. 0. 20.06	2.844	4		80. 27. 13.32		4	0.59	13.32	— 0.10
507	W. B. XVIII. 61...	3	0.55	18. 3. 56.20	3.276	3		98. 45. 32.32		3	0.55	32.32	0.34
508	μ Sagittarii.....	18	0.59	18. 4. 54.74	3.587	19		111. 5. 33.25		19	0.58	33.25	0.44
509	W. B. XVIII. 147..	4	0.55	18. 7. 27.01	3.271	4		98. 31. 43.03		4	0.55	43.03	0.65
510	W. B. XVIII. 265..	3	0.53	18. 12. 2.23	3.259	3		98. 2. 19.67		3	0.53	19.67	1.05
511	B. A. C. 6222.....	3	0.59	18. 13. 4.58	3.637	3		112. 59. 4.26		3	0.59	4.26	1.14
512	*			18. 13. (10)		1		98. 21. 46.13		1	0.49	46.13	1.15
513	*	3	0.52	18. 13. 22.75	3.318	3		98. 20. 47.24		3	0.52	47.24	1.17
514	η Serpentis	7	0.60	18. 13. 39.12	+ 3.102	7		92. 55. 59.82		7	0.60	59.82	0.54
515	37 Draconis	1	0.61	18. 16. 8.93	— 0.353	1		21. 17. 54.17		1	0.61	54.17	1.35
516	Lalande 33885.....	1	0.57	18. 16. 9.88	+ 3.639	1		113. 3. 16.47		1	0.57	16.47	1.41
517	38 Draconis	2	0.60	18. 17. 50.95	— 0.358	2		21. 19. 3.17		2	0.60	3.17	1.48
518	λ Sagittarii.....	6	0.63	18. 18. 50.19	+ 3.707	6		115. 29. 52.79		6	0.63	52.79	1.41
519	δ Ursæ Minoris	19	0.21	18. 20. 5.10	— 19.308	22	2	3. 24. 6.41	5.14	42	0.35	6.48	1.76
520	B. A. C. 6285.....	2	0.63	18. 21. 23.04	+ 3.936	2		123. 4. 53.76		2	0.63	53.76	1.75
521	Lalande 34222.....	3	0.57	18. 23. 35.46	3.619	3		112. 23. 37.21		3	0.57	37.21	2.06
522	α Lyræ	39	0.48	18. 31. 55.71	2.031	27	1	51. 21. 5.02	6.02	28	0.42	5.02	3.08
523	φ Sagittarii.....	13	0.57	18. 36. 24.44	3.758	13		117. 8. 14.83		13	0.57	14.83	3.13
524	β ¹ Lyræ.....	38	0.50	18. 44. 37.02	2.213	32	1	56. 48. 22.17	22.18	33	0.48	22.17	3.86
525	β ² Lyræ.....			18. 44. (40)		2		56. 49. 1.85		2	0.62	1.85	3.88
526	ε Aquilæ.....	10	0.59	18. 52. 54.31	2.723	15	6	75. 7. 44.88	45.15	21	0.13	44.96	4.48
527	θ Sagittarii.....	1	0.42	18. 55. 48.65	3.600	1		111. 57. 11.69		1	0.42	11.69	4.80
528	ζ Aquilæ.....	32	0.57	18. 58. 36.48	2.755	28		76. 21. 11.03		28	0.59	11.03	5.01
529	π Sagittarii.....	2	0.61	19. 0. 57.54	3.575	2		111. 15. 13.76		2	0.61	13.76	5.27
530	ψ Sagittarii.....	14	0.64	19. 6. 27.69	+ 3.687	14		115. 30. 24.65		14	0.63	24.65	— 5.75

493. Of the 11th magnitude.

513. Of the 11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R.A. 1852, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
531	ω Aquilæ.....	15	0.62	19. 10. 52.15	+2.818	15	1	78. 40. 5.31	3.79	16	0.63	5.22	-6.16
532	δ Aquilæ.....	28	0.62	19. 18. 2.13	+3.025	22		87. 10. 35.39		22	0.64	35.39	6.82
533	τ Draconis.....	3	0.61	19. 18. 22.28	-1.097	2		16. 55. 14.74		2	0.60	14.74	6.81
534	W. B. XIX. 561....	3	0.61	19. 22. 39.92	+3.258	3		98. 29. 25.01		3	0.62	25.01	7.08
535	W. B. XIX. 621....	3	0.62	19. 24. 55.99	3.253	3		98. 18. 29.50		3	0.62	29.50	7.26
536	B. A. C. 6702.....			19. 26. (40)		2	2	13. 44. 11.96	9.88	4	0.58	10.92	7.40
537	μ Aquilæ.....	10	0.65	19. 26. 51.48	2.934	9		82. 55. 54.10		9	0.65	54.10	7.32
538	W. B. XIX. 689 ...	3	0.64	19. 27. 30.36	3.240	3		97. 46. 45.40		3	0.64	45.40	7.47
539	ϵ^2 Sagittarii.....	11	0.65	19. 34. 2.96	3.440	10		106. 27. 59.31		10	0.65	59.31	8.03
540	W. B. XIX. 895 ...	3	0.60	19. 34. 50.49	3.208	3		96. 49. 6.22		3	0.60	6.22	8.06
541	γ Aquilæ.....	28	0.67	19. 39. 13.38	2.855	20	1	79. 44. 38.60	37.70	21	0.61	38.56	8.43
542	α Aquilæ.....	38	0.56	19. 43. 33.71	2.929	27		81. 31. 8.83		27	0.50	8.83	9.15
543	δ Sagittarii.....	6	0.66	19. 47. 51.52	3.696	6		117. 33. 28.78		6	0.66	28.78	9.10
544	β Aquilæ.....	24	0.66	19. 48. 2.57	2.950	18		83. 57. 34.36		18	0.63	34.36	8.64
545	ϵ Sagittarii.....	9	0.65	19. 53. 33.03	3.705	9		118. 7. 0.68		9	0.65	0.68	9.58
546	ϵ Draconis.....			19. 59. (50)		2	2	25. 35. 33.61	33.98	4	0.60	33.80	10.00
547	65 Draconis.....			20. 0. (40)		1	1	25. 46. 59.44	58.11	2	0.50	58.78	10.00
548	θ Aquilæ.....	13	0.64	20. 3. 40.00	3.103	12		91. 15. 25.09		12	0.64	25.09	10.32
549	α^1 Capricorni.....	3	0.62	20. 9. 26.42	3.334	6		102. 57. 42.05		6	0.69	42.05	10.75
550	α^2 Capricorni.....	18	0.68	20. 9. 50.34	3.335	16		102. 59. 59.50		16	0.68	59.50	10.78
551	σ Capricorni.....	5	0.71	20. 10. 50.99	+3.477	5		109. 34. 35.87		5	0.71	35.87	10.87
552	λ Ursæ Minoris ...	7	0.56	20. 11. 13.64	-53.922	10	5	1. 7. 59.42	59.27	30	0.45	59.78	10.86
	λ Ursæ Minoris S.P.					10	5	60.18	60.24				
553	β Capricorni.....	4	0.74	20. 12. 41.44	+3.380	4		105. 14. 41.91		4	0.69	41.91	11.01
554	ϵ Delphini.....	10	0.67	20. 26. 8.50	2.868	10	1	79. 11. 48.30	48.06	11	0.68	48.28	11.93
555	B. A. C. 7090.....			20. 26. (30)		1	1	21. 43. 31.65	32.59	2	0.61	32.12	12.03
556	β Delphini.....	8	0.67	20. 30. 36.49	2.813	10	3	75. 55. 0.56	0.26	13	0.65	0.49	12.23
557	ν Capricorni.....	2	0.80	20. 31. 37.20	3.426	2		108. 39. 22.87		2	0.80	22.87	12.36
558	B. A. C. 7146.....	2	0.67	20. 32. 13.09	2.784	3	1	74. 40. 44.68	44.00	4	0.67	44.51	12.38
559	α Delphini.....	5	0.69	20. 32. 45.80	2.791	5		74. 36. 26.37		5	0.69	26.37	12.41
560	α Cygni.....	21	0.48	20. 36. 23.29	2.042	22		45. 14. 47.60		22	0.50	47.60	12.65
561	ϵ Aquarii.....	6	0.67	20. 39. 39.59	3.259	7		100. 2. 3.00		7	0.66	3.00	12.84
562	4 Cephei.....			20. 41. (20)		1	1	23. 52. 46.19	49.03	2	0.75	47.61	12.97
563	32 Vulpeculæ.....	8	0.66	20. 48. 15.22	2.557	10	2	62. 30. 10.64	10.30	12	0.69	10.58	13.47
564	η Capricorni.....	3	0.65	20. 55. 58.55	3.430	3		110. 26. 12.46		3	0.65	12.46	13.91
565	θ Capricorni.....	9	0.67	20. 57. 37.25	3.387	8		107. 49. 4.17		8	0.66	4.17	14.00
566	61 Cygni (1st star) .	15	0.72	21. 0. 16.00	2.673	16	1	51. 58. 32.83	33.61	17	0.72	32.88	17.43
567	61 Cygni (2d star) ..	7	0.72	21. 0. 17.55	2.684	10	1	51. 58. 37.91	37.40	11	0.73	37.86	17.22
568	ζ Cygni.....	28	0.68	21. 6. 38.37	2.550	14		60. 22. 40.50		14	0.62	40.50	14.53
569	29 Capricorni.....	1	0.65	21. 7. 32.95	3.334	1		105. 47. 1.66		1	0.65	1.66	14.66
570	α Equulei.....	9	0.73	21. 8. 25.43	3.005	10		85. 21. 40.78		10	0.72	40.78	14.61
571	ι Capricorni.....	7	0.69	21. 13. 59.95	3.357	7		107. 27. 42.96		7	0.70	42.96	15.07
572	α Cephei.....	7	0.50	21. 15. 2.63	1.438	10	5	28. 2. 25.47	25.51	17	0.35	25.43	15.08
	α Cephei S.P.....					2		24.86					
573	*	4	0.73	21. 15. 38.62	0.529	4		19. 4. 16.72		4	0.73	16.72	15.12
574	β Aquarii.....	14	0.72	21. 23. 45.85	3.167	10		96. 13. 10.90		10	0.68	10.90	15.60
575	β Cephei.....	10	0.49	21. 26. 44.01	0.805	16	10	20. 5. 18.23	18.68	28	0.62	18.33	15.68
	β Cephei S.P.....					2		16.98					
576	ξ Aquarii.....	9	0.73	21. 29. 52.17	3.202	8		98. 30. 55.55		8	0.73	55.55	15.89
577	κ Capricorni.....	1	0.73	21. 34. 23.33	+3.364	1		109. 32. 20.36		1	0.73	20.36	-16.15

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
578	ε Pegasi	29	0.65	21. 36. 54.98 ^{h m s}	+2.951 ^s	17		80. 48. 5.13 ^{o ' "}	"	17	0.61	5.13 ["]	-16.29 ["]
579	δ Capricorni	10	0.71	21. 38. 51.99	3.323	10		106. 47. 47.49		10	0.72	47.49	16.12
580	μ Capricorni	3	0.55	21. 45. 13.28	3.285	3		104. 14. 45.77		3	0.58	45.77	16.72
581	16 Pegasi	11	0.74	21. 46. 19.83	2.730	18	8	64. 46. 10.48	9.18	26	0.74	10.08	16.72
582	α Aquarii	15	0.72	21. 58. 10.86	3.083	14		91. 2. 12.35		14	0.72	12.35	17.30
583	Gr. (12 yr.) 1979...	1	0.80	22. 2. 41.01	2.128	1		34. 48. 57.06		1	0.80	57.06	17.48
584	θ Pegasi	5	0.71	22. 2. 44.02	3.033	6		84. 31. 42.53		6	0.72	42.53	17.53
585	Gr. (12 yr.) 1984...	1	0.67	22. 3. 27.18	2.131	1		34. 41. 40.49		1	0.67	40.49	17.52
586	Oeltz. Arg. {23522}	1	0.69	22. 3. 53.37	2.097	1		33. 40. 39.44		1	0.69	39.44	17.54
587	Gr. (12 yr.) 1986...	1	0.81	22. 4. 1.66	2.130	1		34. 31. 58.59		1	0.81	58.59	17.54
588	W. B. XXII. 143 ..	1	0.69	22. 7. 45.19	3.172	1		99. 7. 51.22		1	0.69	51.22	17.70
589	42 Aquarii	5	0.78	22. 8. 52.17	3.221	5		103. 34. 3.54		5	0.78	3.54	17.78
590	θ Aquarii	6	0.79	22. 9. 1.29	3.175	7		98. 31. 6.35		7	0.79	6.35	17.75
591	γ Aquarii	6	0.77	22. 14. 0.65	3.106	6		92. 7. 53.14		6	0.77	53.14	17.99
592	σ Aquarii	4	0.71	22. 22. 48.75	3.184	3		101. 26. 1.55		3	0.71	1.55	18.36
593	β Piscis Australis ..	1	0.67	22. 23. 4.80	3.437	1		123. 6. 13.31		1	0.67	13.31	18.26
594	W. B. XXII. 493 ..	4	0.66	22. 23. 32.27	3.140	4		97. 18. 29.73		4	0.66	29.73	18.30
595	η Aquarii	11	0.74	22. 27. 44.99	3.087	12		90. 52. 43.77		12	0.75	43.77	18.40
596	ε Piscis Australis ..	5	0.79	22. 32. 27.61	3.338	5		117. 48. 50.07		5	0.79	50.07	18.59
597	ζ Pegasi	19	0.72	22. 34. 4.88	2.990	16		79. 56. 24.29		16	0.70	24.29	18.68
598	η Pegasi	3	0.77	22. 36. 4.12	2.805	6	2	60. 33. 5.53	4.85	8	0.77	5.53	18.71
599	τ ² Aquarii	4	0.68	22. 41. 45.12	3.187	4		104. 22. 21.76		4	0.68	21.76	18.90
600	μ Pegasi	5	0.66	22. 42. 51.79	2.888	5		66. 10. 44.20		5	0.66	44.20	18.91
601	λ Aquarii	3	0.56	22. 44. 53.18	3.133	2		98. 21. 56.15		2	0.51	56.15	19.05
602	*	1	0.72	22. 46. 15.27	3.137	1		98. 49. 46.32		1	0.72	46.32	19.03
603	δ Aquarii	4	0.80	22. 46. 47.39	3.195	4		106. 36. 24.30		4	0.80	24.30	19.06
604	W. B. XXII. 1002 ..	1	0.67	22. 48. 1.18	3.134	1		98. 36. 32.35		1	0.67	32.35	19.07
605	Fomalhaut	4	0.78	22. 49. 27.74	3.334	6		120. 24. 20.52		6	0.80	20.52	18.96
606	*	1	0.59	22. 49. 29.69	3.130	1		98. 21. 11.98		1	0.59	11.98	19.11
607	β Pegasi	5	0.79	22. 56. 36.29	2.898	5		62. 43. 8.50		5	0.79	8.50	19.46
608	α Pegasi	27	0.67	22. 57. 23.47	2.983	18		75. 35. 24.76		18	0.68	24.76	19.31
609	ρ Aquarii	4	0.76	23. 6. 39.21	3.114	4		96. 50. 45.95		4	0.76	45.95	19.35
610	γ Piscium	9	0.77	23. 9. 29.61	3.110	8		87. 31. 32.46		8	0.76	32.46	19.61
611	ψ ² Aquarii	5	0.71	23. 10. 12.51	3.128	5		99. 59. 22.92		5	0.71	22.92	19.56
612	ψ ³ Aquarii	5	0.74	23. 11. 15.54	3.128	5		100. 25. 8.89		5	0.74	8.89	19.62
613	W. B. XXIII. 229 ..	3	0.72	23. 11. 18.48	3.048	3		85. 23. 53.25		3	0.72	53.25	19.60
614	97 Aquarii	7	0.80	23. 14. 53.40	3.154	7		105. 51. 3.81		7	0.80	3.81	19.70
615	*	1	0.67	23. 18. 18.39	3.154	1		108. 55. 54.25		1	0.67	54.25	19.72
616	κ Piscium	8	0.79	23. 19. 20.71	3.079	8		89. 33. 14.70		8	0.79	14.70	19.64
617	W. B. XXIII. 444 ..	3	0.95	23. 22. 0.38	3.049	3		84. 42. 42.51		3	0.95	42.51	19.78
618	B. A. C. 8221	5	0.72	23. 29. 58.91	3.124	5		103. 52. 48.62		5	0.72	48.62	19.90
619	ι Piscium	18	0.77	23. 32. 20.35	3.085	15		85. 10. 32.20		15	0.78	32.20	19.47
620	γ Cephei	8	0.51	23. 33. 18.80	2.389	8	3	13. 11. 37.01	35.57	12	0.62	36.60	20.08
	γ Cephei S. P.					1		36.43					
621	B. A. C. 8239	3	0.85	23. 33. 29.11	3.114	3		102. 30. 3.91		3	0.81	3.91	19.96
622	20 Piscium	2	0.81	23. 40. 19.98	3.085	2		93. 35. 2.33		2	0.81	2.33	19.99
623	δ Sculptoris	4	0.73	23. 41. 12.55	3.141	4		118. 56. 53.98		4	0.73	53.98	19.89
624	B. A. C. 8285	8	0.88	23. 42. 36.34	3.092	8		100. 48. 0.35		8	0.88	0.35	19.85
625	27 Piscium	4	0.80	23. 51. 5.70	+3.072	4		94. 22. 37.26		4	0.79	37.26	-19.92

583. The R. A. of Gr. (12 yr.) 1979, and the N. P. D. of Gr. (12 yr.) 1982 belong to the same star.

586. Of the 8-9th magnitude.

588. Of the 9th magnitude.

594. Of the 7th magnitude.

585. Identical with Oeltz. Arg. 23506-23507.

615. Of the 12-13th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D. — *concluded.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1852, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1852 Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N.P.D.
						D.	R.	D.	R.				
626	ω Piscium	7	0.75	^h 23. 51. ^m 42.78 ^s	+ 3.080	7		^o 83. 57. ['] 22.12 ["]	"	7	0.75	22.12	-19.96
627	30 Piscium	1	0.67	23. 54. 22.08	3.082	1		96. 50. 11.71		1	0.67	11.71	20.03
628	2 Ceti	3	0.93	23. 56. 9.23	3.082	3		108. 9. 34.74		3	0.93	34.74	20.07
629	3 Ceti	3	0.65	23. 56. 55.41	3.075	2		101. 20. 1.07		2	0.65	1.07	20.07
630	*	1	0.76	23. 57. 35.74	3.071	1		89. 47. 24.57		1	0.76	24.57	20.05
631	*	1	0.96	23. 57. 35.95	3.071	1		90. 14. 1.71		1	0.96	1.71	20.05
632	33 Piscium	5	0.77	23. 57. 45.51	3.076	4		96. 32. 8.11		4	0.81	8.11	20.10
633	W. B. XXIII. 1194	1	0.80	23. 57. 53.60	3.073	1		98. 29. 14.81		1	0.80	14.81	20.05
634	*	1	0.75	23. 59. 45.27	3.071	1		89. 9. 34.14		1	0.75	34.14	20.06
635	W. B. XXIII. 1227	1	0.88	23. 59. 48.99	3.071	1		101. 51. 26.23		1	0.88	26.23	20.06
636	W. B. XXIII. 1232	2	0.80	23. 59. 57.09	+ 3.071	2		101. 31. 36.91		2	0.80	36.91	-20.06

630. Of the 10th magnitude.

631. Of the 12th magnitude.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1852.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
1	W. B. XXIII. 1242.....	0.10316	0.07918	1.44825	0.07404	84.966	9.88936	0.14832	0.69426	0.07953	119.486
2	W. B. XXIII. 1249.....	0.10300	0.07925	1.44824	0.07506	84.903	9.88734	0.13597	0.69467	0.08023	120.507
4	W. B. O. 60.....	0.10319	0.07959	1.44832	0.08438	84.216	9.89159	9.99481	0.69442	0.08498	129.478
6	* { R. A. 0 ^h . 5 ^m . (50 ^s)..... } { N. P. D. 95°. 28'..... }	0.10276	0.07982	1.44819	0.07687	84.761	9.88383	0.11235	0.69467	0.08856	121.891
7	W. B. O. 97.....	0.10278	0.07984	1.44831	0.08176	84.411	9.88717	0.03881	0.69467	0.08876	126.773
8	W. B. O. 102.....	0.10318	0.07989	1.44813	0.07396	84.931	9.88627	0.14925	0.69467	0.08933	118.857
9	W. B. O. 126.....	0.10293	0.08002	1.44836	0.08295	84.302	9.89009	0.01904	0.69507	0.09132	127.674
10	W. B. O. 128.....	0.10322	0.08005	1.44841	0.08454	84.163	9.89476	9.99210	0.69524	0.09150	129.018
11	W. B. O. 189.....	0.10312	0.08040	1.44703	0.07414	84.972	9.88366	0.14726	0.69628	0.09660	118.593
13	Lalande 390.....	0.10258	0.08060	1.44817	0.07761	84.664	9.88252	0.10209	0.69709	0.09996	121.856
15	W. B. O. 387.....	0.10296	0.08169	1.44784	0.07453	84.805	9.87754	0.14242	0.70347	0.11473	117.817
16	W. B. O. 389.....	0.10296	0.08169	1.44784	0.07453	84.805	9.87754	0.14242	0.70347	0.11473	117.817
17	* { R. A. 0 ^h . 25 ^m . (10 ^s)... } { N. P. D. 88° 32'..... }	0.10253	0.08181	1.44830	0.07980	84.430	9.88581	0.06986	0.70465	0.11714	122.598
35	42 Ceti.....	0.10155	0.08660	1.44811	0.07866	84.259	9.88033	0.08690	0.77322	0.17886	115.625
40	B. A. C. 482.....	0.11860	0.09562	1.46016	0.11255	78.976	0.10755	9.62435	0.80738	0.19758	120.345
54	W. B. II. 158.....	0.09919	0.09214	1.44972	0.08184	83.694	9.92433	0.03750	0.90991	0.24065	108.479
58	W. B. II. 306.....	0.09887	0.09292	1.45031	0.08263	83.561	9.93962	0.02475	0.93017	0.24782	107.325
61	W. B. II. 417.....	0.09832	0.09336	1.44981	0.08164	83.678	9.92619	0.04089	0.94625	0.25333	106.035
62	B. A. C. 789.....	0.09821	0.09350	1.44974	0.08149	83.689	9.92437	0.04334	0.95124	0.25499	105.676
63	79 Ceti.....	0.09809	0.09349	1.44734	0.07777	84.143	9.85928	0.09989	0.95303	0.25555	104.655
69	40 Arietis.....	0.09815	0.09516	1.45247	0.08502	83.116	9.99192	9.98575	0.98422	0.26558	103.615
71	B. A. C. 892.....	0.09766	0.09540	1.45211	0.08432	83.213	9.98354	9.99753	0.99621	0.26925	108.266
72	B. A. C. 905.....	0.09691	0.09520	1.45014	0.08162	83.622	9.93481	0.04121	1.00475	0.27181	102.117
74	λ Ceti.....	0.09668	0.09548	1.45030	0.08176	83.596	9.93903	0.03909	1.01343	0.27438	101.520
75	5 Eridani.....	0.09652	0.09538	1.44750	0.07823	84.078	9.86345	0.09310	1.01457	0.27470	101.300
78	ρ ³ Eridani.....	0.09633	0.09587	1.44617	0.07669	84.265	9.82677	0.11464	1.02648	0.27820	100.478
82	94 Ceti.....	0.09555	0.09629	1.44779	0.07867	84.028	9.87155	0.08680	1.04684	0.28393	99.433
84	95 Ceti.....	0.09513	0.09668	1.44786	0.07877	84.019	9.87338	0.08543	1.06050	0.28767	98.608
85	Lalande 6129.....	0.09577	0.09751	1.45291	0.08408	83.151	0.00061	0.00192	1.06296	0.28829	97.427
87	κ ² Ceti.....	0.09495	0.09687	1.44910	0.08005	83.833	9.90717	0.06584	1.06688	0.28932	98.051
90	σ Tauri.....	0.09452	0.09775	1.45130	0.08210	83.486	9.96317	0.03374	1.08846	0.29494	95.998
92	τ Tauri.....	0.09425	0.09779	1.45076	0.08154	83.583	9.94993	0.04269	1.09380	0.29636	95.783
94	10 Tauri.....	0.09369	0.09786	1.44823	0.07915	83.980	9.88360	0.07948	1.10506	0.29912	95.792
95	12 Tauri.....	0.09348	0.09805	1.44900	0.07983	83.876	9.90431	0.06933	1.11170	0.30075	95.129
98	25 Eridani.....	0.09303	0.09835	1.44802	0.07899	84.020	9.87798	0.08202	1.12393	0.30369	94.657
102	B A C. 1205.....	0.09242	0.09877	1.44777	0.07880	84.066	9.87100	0.08479	1.14063	0.30758	93.685
103	32 Eridani.....	0.09226	0.09892	1.44722	0.07838	84.138	9.85561	0.09082	1.14573	0.30873	93.577

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1852.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		c	f	g	h		c'	f'	g'	h'	
104	32 Tauri	0.09314	0.10051	1.45522	0.08446	82.914	0.04634	9.99811	1.14855	0.30935	89.432
107	35 Eridani	0.09162	0.09930	1.44764	0.07875	84.100	9.86739	0.08565	1.16187	0.31229	92.396
108	Rümker 1092	0.09214	0.10139	1.45596	0.08439	82.867	0.05956	0.00044	1.17569	0.31521	86.657
110	W. B. IV. 124	0.09047	0.09995	1.44920	0.07978	83.941	9.90972	0.07016	1.19053	0.31824	89.680
112	W. B. IV. 180	0.09023	0.10006	1.44894	0.07960	83.982	9.90293	0.07279	1.19595	0.31930	89.455
117	* { R. A. 4 ^h . 27 ^m . (0 ^s) ... } { N. P. D. 58°. 9'	0.09023	0.10453	1.45990	0.08505	82.416	0.11935	9.99654	1.23291	0.32617	78.794
120	B. A. C. 1460	0.08790	0.10154	1.45194	0.08083	83.721	9.97763	0.05407	1.25096	0.32913	83.212
121	μ Eridani	0.08756	0.10124	1.44706	0.07866	84.297	9.85077	0.08692	1.25473	0.32974	86.741
125	ω Eridani	0.08685	0.10158	1.44629	0.07840	84.399	9.82857	0.09053	1.26943	0.33199	86.349
126	5 Orionis	0.08682	0.10149	1.44902	0.07948	84.122	9.90510	0.07461	1.26950	0.33199	84.208
128	δ Eridani	0.08651	0.10168	1.44638	0.07849	84.402	9.83128	0.08948	1.27618	0.33291	85.855
129	π ^s Orionis	0.08631	0.10164	1.44877	0.07937	84.172	9.89813	0.07639	1.27952	0.33341	83.709
132	ψ Eridani	0.08602	0.10191	1.44567	0.07829	84.488	9.81033	0.09219	1.28597	0.33424	85.779
134	m Tauri	0.08588	0.08651	1.45485	0.08131	84.675	0.03874	0.04777	1.29424	0.33531	77.025
136	66 Eridani	0.08547	0.10195	1.44655	0.07865	84.431	9.83622	0.08714	1.29566	0.33549	84.465
138	* { R. A. 5 ^h . 3 ^m . (10 ^s) ... } { N. P. D. 63°. 44'	0.08574	0.10451	1.45803	0.08209	83.087	0.09346	0.05795	1.30271	0.33634	73.386
139	ρ Orionis	0.08484	0.10204	1.44919	0.07945	84.212	9.90953	0.07518	1.30689	0.33683	81.354
142	* { R. A. 5 ^h . 10 ^m . (20 ^s) ... } { N. P. D. 65°. 31'	0.08483	0.10434	1.45736	0.08153	83.256	0.08282	0.04576	1.31601	0.33782	72.707
143	* { R. A. 5 ^h . 10 ^m . (40 ^s) ... } { N. P. D. 63°. 54'	0.08487	0.10467	1.45804	0.08170	83.162	0.09339	0.04377	1.31631	0.33787	72.065
144	B. A. C. 1648	0.08487	0.10506	1.45879	0.08184	83.066	0.10452	0.04225	1.31793	0.33800	71.249
145	Lalande 10056	0.08435	0.10450	1.45753	0.08136	83.278	0.08550	0.04837	1.32374	0.33858	71.810
150	118 Tauri	0.08378	0.10465	1.45767	0.08112	83.312	0.08756	0.05179	1.33287	0.33943	70.803
151	* { R. A. 5 ^h . 21 ^m . (50 ^s) ... } { N. P. D. 63°. 32'	0.08362	0.10497	1.45829	0.08116	83.248	0.09722	0.05159	1.33598	0.33971	69.904
164	B. A. C. 1851	0.08112	0.10293	1.45181	0.07951	84.195	9.97422	0.07425	1.36935	0.34179	73.771
172	W. B. V. 1289	0.08018	0.10266	1.44891	0.07922	84.526	9.90202	0.07872	1.38345	0.34224	76.088
173	B. A. C. 1924	0.08043	0.11635	1.47356	0.08015	81.460	0.23384	0.06991	1.38653	0.34233	53.590
174	Rümker 1673	0.07986	0.10528	1.45834	0.07948	83.598	0.09809	0.07521	1.38925	0.34242	64.533
176	66 Orionis	0.07950	0.10265	1.44976	0.07922	84.507	9.92420	0.07884	1.39343	0.34242	74.338
177	Rümker 1701	0.07948	0.10530	1.45837	0.07932	83.630	0.09847	0.07731	1.39387	0.34242	64.047
178	* { R. A. 6 ^h . 0 ^m . (0 ^s) ... } { N. P. D. 66°. 47'	0.07916	0.10468	1.45703	0.07921	83.813	0.07744	0.07929	1.39819	0.34242	65.095
179	Lalande 11684	0.07899	0.10523	1.45823	0.07909	83.697	0.09639	0.08033	1.40046	0.34242	63.534
180	Lalande 11714	0.07889	0.10523	1.45825	0.07906	83.705	0.09639	0.08091	1.40172	0.34242	63.406
183	Lalande 11854	0.07846	0.10509	1.45795	0.07888	83.782	0.09213	0.08338	1.40732	0.34233	63.156
184	κ ¹ Orionis	0.07838	0.10322	1.45284	0.07901	84.317	9.99757	0.08170	1.40894	0.34233	69.206
185	Lalande 11978	0.07806	0.10512	1.45803	0.07869	83.812	0.09339	0.08565	1.41223	0.34224	62.571
186	Lalande 11996	0.07801	0.10515	1.45840	0.07867	83.786	0.09433	0.08614	1.41322	0.34224	62.399
187	Rümker 1809	0.07787	0.10627	1.46022	0.07852	83.579	0.12441	0.08762	1.41382	0.34220	60.030

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		e	f	g	h		e'	f'	g'	h'	
188	7 Monocerotis	0.07787	0.10284	1.44543	0.07936	84.930	9.80281	0.07651	1.41650	0.34215	78.033
190	9 Monocerotis	0.07709	0.10265	1.44671	0.07934	84.902	9.84074	0.07688	1.42670	0.34170	75.870
191	* { R. A. 6 ^h . 19 ^m . (50 ^s) ... N. P. D. 64°. 48'	0.07686	0.10496	1.45783	0.07820	83.957	0.09040	0.09230	1.42705	0.34170	61.305
192	* { R. A. 6 ^h . 20 ^m . (0 ^s) ... N. P. D. 64°. 52'	0.07686	0.10496	1.45783	0.07820	83.957	0.08994	0.09237	1.42729	0.34166	61.320
194	* { R. A. 6 ^h . 21 ^m . (10 ^s) ... N. P. D. 64°. 46'	0.07672	0.10496	1.45785	0.07814	83.970	0.09054	0.09319	1.42894	0.34161	61.105
195	19 Geminorum	0.07666	0.10347	1.45411	0.07849	84.354	0.02416	0.08906	1.43151	0.34143	65.594
196	12 Monocerotis	0.07660	0.10263	1.45003	0.07896	84.706	9.93124	0.08248	1.43341	0.34129	71.022
197	* { R. A. 6 ^h . 27 ^m . (30 ^s) ... N. P. D. 65°. 27'	0.07600	0.10475	1.45753	0.07786	84.079	0.08551	0.09692	1.43799	0.34097	60.596
198	* { R. A. 6 ^h . 28 ^m . (0 ^s) ... N. P. D. 65°. 29'	0.07593	0.10474	1.45752	0.07784	84.087	0.08525	0.09711	1.43845	0.34097	60.563
201	15 Monocerotis	0.07568	0.10278	1.45185	0.07858	84.643	9.97547	0.08806	1.44488	0.34043	67.581
202	B. A. C. 2189	0.07566	0.10243	1.44848	0.07914	84.893	9.89044	0.07976	1.44576	0.34034	72.305
204	32 Geminorum	0.07513	0.10294	1.45288	0.07829	84.606	9.99835	0.09210	1.45125	0.33980	65.602
206	18 Monocerotis	0.07496	0.10234	1.44917	0.07899	84.904	9.90885	0.08199	1.45463	0.33939	70.738
207	33 Geminorum	0.07467	0.10324	1.45419	0.07793	84.539	0.02568	0.09703	1.45615	0.33925	63.315
210	e Geminorum	0.07419	0.10282	1.45304	0.07804	84.686	0.00187	0.09561	1.46262	0.33840	64.424
214	B. A. C. 2280	0.07358	0.10301	1.45405	0.07764	84.661	0.02292	0.10094	1.46902	0.33751	62.388
216	B. A. C. 2304	0.07331	0.10230	1.45155	0.07823	84.887	9.96830	0.09298	1.47386	0.33670	65.781
219	45 Geminorum	0.07265	0.10280	1.45400	0.07736	84.762	0.02209	0.10441	1.47958	0.33571	61.541
224	20 Monocerotis	0.07259	0.10187	1.44686	0.07964	85.234	9.84501	0.07228	1.48323	0.33500	72.399
225	22 Monocerotis	0.07246	0.10177	1.44816	0.07918	85.181	9.88182	0.07875	1.48494	0.33465	70.308
228	24 Monocerotis	0.07210	0.10168	1.44829	0.07915	85.204	9.88513	0.07935	1.48904	0.33380	69.877
233	W. B. VII. 898	0.06978	0.10134	1.45184	0.07745	85.228	9.97497	0.10381	1.51331	0.32743	62.388
235	* { R. A. 7 ^h . 35 ^m . (10 ^s) ... N. P. D. 79°. 41'	0.06918	0.10106	1.45168	0.07740	85.304	9.97151	0.10453	1.51971	0.32530	62.202
240	B. A. C. 2605	0.06788	0.10167	1.45488	0.07540	85.234	0.03937	0.12929	1.52801	0.32229	55.976
241	84 Geminorum	0.06755	0.10207	1.45596	0.07473	85.187	0.05945	0.13655	1.52892	0.32194	54.071
243	B. A. C. 2636	0.06801	0.10046	1.45125	0.07740	85.460	9.96153	0.10471	1.53218	0.32062	62.131
244	14 Canis Minoris	0.06782	0.10007	1.44909	0.07867	85.582	9.90687	0.08680	1.53535	0.31930	65.981
246	* { R. A. 7 ^h . 55 ^m . (10 ^s) ... N. P. D. 65°. 6'	0.06618	0.10189	1.45659	0.07375	85.310	0.07022	0.14703	1.53981	0.31731	52.039
247	Lalande 15707	0.06618	0.10189	1.45659	0.07375	85.310	0.07022	0.14703	1.53981	0.31731	52.039
248	B. A. C. 2703	0.06612	0.10142	1.45579	0.07415	85.383	0.05649	0.14333	1.54225	0.31617	53.154
252	B. A. C. 2748	0.06617	0.10003	1.45279	0.07596	85.594	9.99726	0.12335	1.54811	0.31328	58.122
256	B. A. C. 2791	0.06581	0.09903	1.49959	0.07817	81.666	9.92006	0.09408	1.55533	0.30939	64.081
261	} ¹ Cancri	0.06386	0.10060	1.45614	0.07278	85.660	0.06284	0.15811	1.56038	0.30636	50.905
& 262		0.06386	0.10060	1.45614	0.07278	85.660	0.06284	0.15811	1.56038	0.30636	50.905
263	B. A. C. 2825	0.06525	0.09865	1.47723	0.08000	83.506	9.85595	0.06677	1.56076	0.30616	68.662
264	² Cancri	0.06371	0.10041	1.45596	0.07281	85.696	0.05971	0.15797	1.56207	0.30535	51.071
265	³ Cancri	0.06342	0.10022	1.45588	0.07270	85.742	0.05821	0.15911	1.56458	0.30373	51.009
268	32 Cancri	0.06328	0.10012	1.45584	0.07264	85.765	0.05763	0.15981	1.56583	0.30292	50.957

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		e	f	g	h		e'	f'	g'	h'	
271	* { R. A. 8 ^h . 35 ^m . (20 ^s)... N. P. D. 47°. 46' }	0.05825	0.10385	1.46264	0.06523	85.788	0.14678	0.20997	1.57496	0.29640	39.838
272	Lalande 17161	0.05825	0.10385	1.46264	0.06523	85.788	0.14678	0.20997	1.57496	0.29640	39.838
275	Lalande 17513	0.06151	0.09839	1.45473	0.07242	86.111	0.03806	0.16343	1.58270	0.29013	51.621
276	Lalande 17528	0.06151	0.09839	1.45473	0.07242	86.111	0.03747	0.16325	1.58288	0.28997	51.671
281	B. A. C. 3076	0.06217	0.09648	1.44989	0.07736	86.904	9.92808	0.10535	1.58859	0.28479	62.253
282	ν Caneri	0.06045	0.09808	1.45521	0.07135	86.239	0.04681	0.17356	1.58887	0.28453	50.173
283	Lalande 17818	0.06085	0.09766	1.45430	0.07237	86.246	0.02954	0.16414	1.58905	0.28434	52.061
284	ω Hydræ	0.06184	0.09613	1.44973	0.07749	86.298	9.92372	0.10363	1.59174	0.28172	62.592
289	Lalande 18105	0.06023	0.09683	1.45376	0.07247	86.381	0.01908	9.97430	1.02594	0.27802	100.156
291	B. A. C. 3133	0.06138	0.09565	1.44937	0.07782	86.368	9.91459	0.09907	1.59606	0.27725	63.380
292	23 Hydræ	0.06097	0.09532	1.44684	0.08094	86.399	9.84544	0.05177	1.59923	0.27368	69.685
294	B. A. C. 3194	0.05856	0.09652	1.45481	0.07032	86.578	0.04013	0.18392	1.60282	0.26950	49.815
295	B. A. C. 3203	0.06049	0.09483	1.44965	0.07730	86.500	9.92191	0.10619	1.60338	0.26875	62.625
296	B. A. C. 3209	0.05960	0.09535	1.45242	0.07348	86.565	9.99060	0.15369	1.60429	0.26766	55.371
298	29 Hydræ	0.06008	0.09460	1.44624	0.08196	86.485	9.82927	0.03575	1.60591	0.26555	71.477
300	B. A. C. 3233	0.06011	0.09438	1.44699	0.08093	86.513	9.84994	0.05209	1.60679	0.26441	69.636
304	33 Hydræ	0.05971	0.09392	1.44707	0.08092	86.566	9.85208	0.05236	1.61018	0.25980	69.636
305	7 Leonis	0.05907	0.09432	1.45167	0.07405	86.694	9.97359	0.14746	1.61052	0.25929	57.005
306	10 Leonis	0.05948	0.09381	1.44991	0.07666	86.652	9.92920	0.11508	1.61145	0.25797	61.847
307	ι Hydræ	0.05946	0.09346	1.44815	0.07934	86.641	9.88142	0.07683	1.61309	0.25555	66.872
310	B. A. C. 3327	0.05717	0.09439	1.45364	0.07031	86.915	0.01854	0.18523	1.61556	0.25169	51.467
312	B. A. C. 3336	0.05890	0.09307	1.44980	0.07662	86.765	9.92649	0.11558	1.61639	0.25038	62.164
314	7 Sextantis	0.05866	0.09245	1.44889	0.07808	86.795	9.90166	0.09538	1.61961	0.24492	65.007
315	* { R. A. 9 ^h . 49 ^m . (10 ^s)... N. P. D. 76°. 8' }	0.05775	0.09240	1.45100	0.07414	86.966	9.95809	0.14664	1.62194	0.24065	58.501
316	* { R. A. 9 ^h . 50 ^m . (30 ^s)... N. P. D. 76° 3' }	0.05764	0.09231	1.45099	0.07409	86.982	9.95799	0.14724	1.62262	0.23941	58.502
319	37 Leonis	0.05657	0.09067	1.45073	0.07364	87.220	9.95253	0.15259	1.63077	0.22196	59.106
321	23 Sextantis	0.05704	0.08990	1.44875	0.07804	87.168	9.89783	0.09602	1.63264	0.21721	66.330
322	42 Leonis	0.05616	0.09025	1.45085	0.07306	87.308	9.95594	0.15911	1.63285	0.21672	58.646
323	B. A. C. 3553	0.05691	0.08965	1.44779	0.08027	87.044	9.87186	0.06247	1.63369	0.21445	69.932
328	B. A. C. 3629	9.90217	0.13662	1.49740	9.90471	98.005	0.18135	0.32435	1.63825	0.20116	27.385
329	33 Sextantis	0.05613	0.08796	1.44813	0.07955	87.238	9.88079	0.07354	1.63999	0.19520	69.821
342	B. A. C. 3882	0.05422	0.08374	1.44909	0.07400	87.965	9.91133	0.14877	1.65036	0.14165	66.116
345	85 Leonis	0.05366	0.08333	1.44925	0.07219	88.141	9.91890	0.16905	1.65107	0.13531	64.489
346	88 Leonis	0.05376	0.08308	1.44913	0.07265	88.130	9.91496	0.16404	1.65133	0.13240	65.295
347	* { R. A. 11 ^h . 26 ^m . (30 ^s)... N. P. D. 67°. 10' }	0.05248	0.08298	1.44952	0.06901	88.437	9.93268	0.19973	1.65169	0.12893	61.543
349	B. A. C. 3940	0.05440	0.08246	1.44859	0.07627	87.926	9.89521	0.12050	1.65196	0.12561	70.137
351	B. A. C. 3955	0.05456	0.08224	1.44818	0.07986	87.715	9.88229	0.06900	1.65218	0.12298	74.576

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		e	f	g	h		e'	f'	g'	h'	
352	B. A. C. 3962	0.05453	0.08204	1.44833	0.07843	87.818	9.88641	0.09022	1.65236	0.12017	73.118
353	B. A. C. 3971	0.05439	0.08187	1.44848	0.07683	87.939	9.89147	0.11280	1.65254	0.11769	71.415
354	ξ Virginis	0.05416	0.08157	1.44858	0.07532	88.069	9.89595	0.13266	1.65280	0.11320	70.000
356	λ ¹ Virginis	0.05412	0.08128	1.44854	0.07532	88.096	9.89495	0.13264	1.65302	0.10932	70.309
361	B. A. C. 4020	0.05437	0.08064	1.44819	0.08042	87.799	9.88280	0.06025	1.65338	0.10041	76.669
362	* { R. A. 11 ^h . 46 ^m . (50°).. N. P. D. 65° 22'	0.05184	0.08071	1.44880	0.06800	88.759	9.91871	0.20847	1.65343	0.09948	63.401
364	B. A. C. 4043	0.05437	0.08009	1.44827	0.07861	87.956	9.88485	0.08772	1.65361	0.09258	75.238
366	* { R. A. 11 ^h . 55 ^m . (50°).. N. P. D. 80° 52'	0.05404	0.07966	1.44832	0.07528	88.232	9.88897	0.13313	1.65371	0.08598	72.137
368	4 Comæ	0.05130	0.07868	1.44807	0.06686	89.067	9.90525	0.21732	1.65374	0.07244	65.063
369	B. A. C. 4122	9.99781	0.07660	1.44615	0.00264	96.628	0.01122	0.33146	1.65365	0.06645	47.529
370	Lalande 23048	0.05409	0.07802	1.44818	0.07540	88.351	9.88292	0.13179	1.65352	0.06147	74.205
371	* { R. A. 12 ^h . 12 ^m . (10°).. N. P. D. 81° 9'	0.05409	0.07789	1.44808	0.07541	88.362	9.88241	0.13151	1.65347	0.05953	74.383
375	B. A. C. 4193	9.72888	0.05864	1.43078	9.73159	122.164	0.03092	0.34075	1.65307	0.04797	57.733
376	* { R. A. 12 ^h . 20 ^m . (10°).. N. P. D. 69° 49'	0.05278	0.07692	1.44758	0.07024	88.905	9.88207	0.18857	1.65300	0.04615	70.576
383	* { R. A. 12 ^h . 46 ^m . (10°).. N. P. D. 88° 50'	0.05487	0.07433	1.44817	0.07870	88.321	9.88190	0.08634	1.64982	9.99992	81.878
391	B. A. C. 4515	0.05604	0.07043	1.44846	0.07980	88.411	9.88979	0.06992	1.64068	9.92492	87.741
393	80 Virginis	0.05612	0.07004	1.44888	0.08099	88.318	9.90181	0.05120	1.63953	9.91724	88.944
394	B. A. C. 4559	0.05591	0.06944	1.44660	0.07463	88.986	9.84306	0.14102	1.63803	9.90769	85.632
396	B. A. C. 4593	0.05659	0.06885	1.44917	0.08146	88.313	9.90962	0.04373	1.63541	9.89153	90.743
400	B. A. C. 4621	0.05551	0.06793	1.44508	0.07147	89.446	9.81058	0.17577	1.63415	9.88411	85.539
403	τ Virginis	0.05743	0.06750	1.44786	0.07834	88.666	9.87362	0.09162	1.62965	9.85902	91.223
404	95 Virginis	0.05745	0.06691	1.44980	0.08233	88.277	9.92678	0.02946	1.62759	9.84791	93.645
412	Lalande 26865	0.04669	0.05294	1.43038	0.05333	93.329	9.63809	0.26052	1.60807	9.75514	90.692
419	* { R. A. 14 ^h . 51 ^m . (40°).. N. P. D. 99° 39'	0.06088	0.06218	1.45064	0.08217	88.313	9.94758	0.03221	1.59871	9.71542	100.303
422	ν ¹ Libræ	0.06095	0.06123	1.45230	0.08398	88.115	9.98758	0.00327	1.59427	9.69742	100.913
423	W. B. XV. 45	0.06180	0.06122	1.45085	0.08211	88.302	9.95255	0.03334	1.59053	9.68279	101.808
424	* { R. A. 15 ^h . 6 ^m . (20°).. N. P. D. 24° 53'	0.03787	0.03540	1.41459	0.04187	96.897	9.55437	0.26089	1.58866	9.67537	97.073
426	Oeltzen's Arg. 15221	0.03988	0.03644	1.41564	0.04394	96.497	9.54332	0.25780	1.58661	9.66759	98.051
427	Oeltzen's Arg. 15222	0.03986	0.03635	1.41556	0.04394	96.510	9.54295	0.25774	1.58651	9.66712	98.088
434	W. B. XV. 637	0.06402	0.05865	1.45271	0.08304	88.114	9.99555	0.01911	1.56760	9.59861	104.871
435	W. B. XV. 644	0.06402	0.05865	1.45271	0.08304	88.114	9.99555	0.01911	1.56760	9.59861	104.871
436	B. A. C. 5184	0.06406	0.05856	1.45285	0.08314	88.099	9.99888	0.01748	1.56707	9.59679	104.874
441	W. B. XV. 838	0.06496	0.05807	1.45263	0.08264	88.123	9.75853	0.02537	1.55948	9.57128	116.325
443	W. B. XV. 864	0.06512	0.05796	1.45260	0.08257	88.128	9.99308	0.02658	1.55802	9.56636	106.235
444	B. A. C. 5254	0.06431	0.05672	1.45568	0.08497	87.853	0.05462	9.99044	1.55799	9.56636	104.615
446	W. B. XV. 910	0.06542	0.05781	1.45255	0.08244	88.131	9.99171	0.02877	1.55545	9.55811	106.608
455	W. B. XV. 1144	0.06660	0.05714	1.45254	0.08207	88.123	9.99145	0.03460	1.54450	9.52405	108.017

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1852.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
468	m ² Herculis.....	0.07014	0.05608	1.44673	0.07848	88.653	9.84147	0.08959	1.51074	9.43268	116.250
469	39 Herculis.....	0.06930	0.05311	1.43822	0.07469	89.817	9.58832	0.13505	1.50819	9.42680	120.843
471	41 Herculis.....	0.07056	0.05583	1.44608	0.07823	88.709	9.82254	0.09310	1.50581	9.42115	117.358
473	B. A. C. 5634.....	0.07079	0.05537	1.44431	0.07753	88.909	9.76974	0.10270	1.50204	9.41290	119.024
474	21 Ophiuchi.....	0.07123	0.05575	1.44775	0.07898	88.488	9.87026	0.08222	1.49892	9.40592	117.027
475	23 Ophiuchi.....	0.07147	0.05552	1.45028	0.07997	88.222	9.93746	0.06731	1.49576	9.39955	115.310
478	B. A. C. 5726.....	0.07214	0.05526	1.44588	0.07835	88.646	9.81640	0.09135	1.48805	9.38408	119.796
480	B. A. C. 5732.....	0.07210	0.05450	1.44284	0.07734	89.002	9.72424	0.10501	1.48622	9.38090	122.140
485	Oeltzen's Arg. 16877....	0.06874	0.03467	1.41696	0.07050	92.886	9.17811	0.14535	1.47362	9.35906	129.949
493	* { R. A. 17 ^h . 12 ^m . (40 ^s) .. N. P. D. 113°. 19'	0.07379	0.05267	1.45688	0.08129	87.640	0.07496	0.04878	1.46408	9.34476	111.853
496	* { R. A. 17 ^h . 24 ^m . (50 ^s) .. N. P. D. 112°. 52'	0.07516	0.05250	1.45679	0.08074	87.603	0.07350	0.05712	1.44818	9.32568	112.904
501	29 Draconis.....	0.07007	9.97984	1.36797	0.07043	99.356	9.09612	0.11299	1.43174	9.31185	136.898
503	* { R. A. 17 ^h . 47 ^m . (50 ^s) .. N. P. D. 100°. 21'	0.07788	0.05398	1.45200	0.07942	87.788	9.97877	0.07572	1.41605	9.30402	120.118
507	W. B. XVIII. 61.....	0.07961	0.05407	1.45143	0.07911	87.728	9.96534	0.08013	1.39181	9.30153	122.266
509	W. B. XVIII. 147.....	0.07998	0.05409	1.45134	0.07907	87.712	9.96332	0.08093	1.38639	9.30203	122.679
510	W. B. XVIII. 265.....	0.08045	0.05414	1.45116	0.07900	87.695	9.95890	0.08181	1.37932	9.30402	123.300
511	B. A. C. 6222.....	0.08067	0.05219	1.45692	0.07861	87.382	0.07569	0.08710	1.37777	9.30452	116.010
512	* { R. A. 18 ^h . 13 ^m . (10 ^s) .. N. P. D. 98°. 22'	0.08060	0.05412	1.45127	0.07897	87.679	9.96166	0.08222	1.37720	9.30452	123.260
513	* { R. A. 18 ^h . 13 ^m . (20 ^s) .. N. P. D. 98°. 21'	0.08060	0.05412	1.45127	0.07897	87.679	9.96166	0.08222	1.37720	9.30452	123.260
516	Lalande 33885.....	0.08102	0.05220	1.45694	0.07846	87.365	0.07595	0.08906	1.37266	9.30649	116.166
521	Lalande 34222.....	0.08184	0.05242	1.45664	0.07817	87.337	0.07103	0.09312	1.36062	9.31234	116.917
530	ψ Sagittarii.....	0.08675	0.05277	1.45761	0.07588	87.052	0.08671	0.12154	1.28502	9.38290	117.233
533	τ Draconis.....	0.10613	9.99312	1.37898	0.10500	92.916	9.23668	9.94399	1.26178	9.41144	155.341
534	W. B. XIX. 561.....	0.08771	0.05573	1.45113	0.07792	87.160	9.95837	0.09764	1.25339	9.42222	127.867
535	W. B. XIX. 621.....	0.08793	0.05584	1.45105	0.07791	87.146	9.95679	0.09771	1.24922	9.42749	128.068
536	B. A. C. 6702.....	0.11520	9.97276	1.36153	0.11421	93.818	9.28831	9.92475	1.24515	9.43268	156.248
538	W. B. XIX. 689.....	0.08816	0.05597	1.45086	0.07796	87.130	9.95197	0.09703	1.24375	9.43456	128.524
540	W. B. XIX. 895.....	0.08885	0.05634	1.45051	0.07703	87.150	9.94330	0.09613	1.22884	9.45395	129.431
547	65 Draconis.....	0.10619	0.02837	1.40956	0.10357	88.842	9.36663	9.87368	1.17388	9.52560	159.201
555	B. A. C. 7090.....	0.11641	0.02344	1.40446	0.11387	87.980	9.46783	9.81024	1.11521	9.59922	160.928
562	4 Cephei.....	0.11612	0.03120	1.41110	0.11308	87.116	9.51486	9.78412	1.07998	9.64104	161.247
573	* { R. A. 21 ^h . 15 ^m . (40 ^s) .. N. P. D. 19°. 4'	0.13153	0.02776	1.40707	0.12880	85.238	9.64048	9.68810	0.99484	9.73463	161.456
588	W. B. XXII. 143.....	0.10023	0.06754	1.44981	0.07575	85.733	9.92742	0.12713	0.86350	9.86307	128.341
589	42 Aquarii.....	0.10060	0.06745	1.45057	0.07400	85.774	9.94825	0.14849	0.86107	9.86537	125.568
594	W. B. XXII. 493.....	0.10084	0.06913	1.44933	0.07635	85.578	9.91450	0.11924	0.82586	9.89834	128.750
602	* { R. A. 22 ^h . 46 ^m . (20 ^s) .. N. P. D. 98°. 50'	0.10175	0.07140	1.44926	0.07561	85.416	9.91360	0.12896	0.77610	9.94648	126.598
604	W. B. XXII. 1002.....	0.10180	0.07159	1.44922	0.07569	85.396	9.91233	0.12800	0.77290	9.94986	126.612

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1852.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
606	* { R. A. 22 ^h . 49 ^m . (30 ^s).. } N. P. D. 98° 21'	0·10182	0·07174	1·44917	0·07580	86·382	9·91084	0·12659	0·76966	9·95301	126·683
613	W. B. XXIII. 229.....	0·10222	0·07405	1·44789	0·08107	84·930	9·87529	0·04984	0·73223	9·99522	131·996
614	97 Aquarii	0·10311	0·07424	1·44940	0·07241	85·330	9·92229	0·16674	0·72711	0·00173	120·894
615	* { R. A. 23 ^h . 18 ^m . (20 ^s).. } N. P. D. 108° 56'	0·10357	0·07455	1·44953	0·07096	85·364	9·92845	0·18160	0·72229	0·00826	119·007
617	W. B. XXIII. 444.....	0·10245	0·07517	1·44793	0·08138	84·813	9·87645	0·04490	0·71773	0·01492	131·328
624	B. A. C. 8285	0·10301	0·07732	1·44856	0·07456	85·044	9·89652	0·14210	0·69909	0·05066	121·530
629	3 Ceti.....	0·10311	0·07884	1·44832	0·07431	84·970	9·89055	0·14510	0·69426	0·07414	120·063
630	* { R. A. 23 ^h . 57 ^m . (40 ^s).. } N. P. D. 89° 47'	0·10267	0·07894	1·44825	0·07927	84·660	9·88417	0·07781	0·69426	0·07548	125·267
631	* { R. A. 23 ^h . 57 ^m . (40 ^s).. } N. P. D. 90° 14'	0·10267	0·07894	1·44825	0·07909	84·672	9·88417	0·08066	0·69426	0·07548	125·070
633	W. B. XXIII. 1194.....	0·10292	0·07897	1·44828	0·07557	84·892	9·88756	0·12953	0·69426	0·07601	121·297
634	* { R. A. 23 ^h . 59 ^m . (50 ^s).. } N. P. D. 89° 10'	0·10267	0·07916	1·44825	0·07954	84·626	9·88417	0·07378	0·69426	0·07892	125·305
636	W. B. XXIII. 1232	0·10313	0·07922	1·44825	0·07423	84·951	9·88908	0·14611	0·69426	0·07912	119·705

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS

AND

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF THE

SUN, MOON, AND PLANETS,

(The Right Ascensions of the Sun, Moon, and Planets generally corrected for Personal Equation ; and the North Polar Distances of all Planets, corrected for Discordance of Direct and Reflexion Results, and for Flexure of the Telescope of the Transit-Circle)

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC:

WITH

THE INFERRED POSITION OF THE ECLIPTIC; THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE

1852.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN, corrected for Refraction and Parallax: compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1852.	m s	s	s	° "	"	"	1852.	m s	s	s	° "	"	"
Jan. 2	2. 21'92	21'98	+ 0'06	32. 36'03	34'60	- 1'43	June 2	2. 16'78	16'82	+ 0'04	31. 32'73	34'00	+ 1'27
3	2. 21'76	21'88	+ 0'12	32. 33'40	34'60	+ 1'20	14				31. 34'81	31'40	- 3'41
6	2. 21'81	21'54	- 0'27	32. 37'88	34'60	- 3'28	24	2. 17'70	17'74	+ 0'04	31. 31'63	30'40	- 1'23
7	2. 21'64	21'54	- 0'10	32. 36'71	34'40	- 2'31	July 3	2. 17'29	17'24	- 0'05	31. 30'96	30'20	- 0'76
8				32. 32'65	34'40	+ 1'75	5	2. 17'12	17'04	- 0'08	31. 30'85	30'20	- 0'65
16	2. 20'11	19'96	- 0'15	32. 35'40	33'40	- 2'00	6	2. 17'23	16'94	- 0'29	31. 35'19	30'20	- 4'99
22	2. 18'75	18'74	- 0'01	32. 34'47	32'40	- 2'07	7	2. 16'79	16'84	+ 0'05	31. 32'46	30'20	- 2'26
23	2. 18'50	18'52	+ 0'02	32. 31'30	32'20	+ 0'90	9	2. 16'57	16'62	+ 0'05	31. 34'08	30'40	- 3'68
28	2. 17'44	17'42	- 0'02	32. 21'10	31'00	(+ 9'90)	13	2. 16'24	16'12	- 0'12	31. 33'14	30'60	- 2'54
29	2. 17'00	17'18	+ 0'18	32. 31'49	30'80	- 0'69	15	2. 15'83	15'84	+ 0'01	31. 34'59	30'80	- 3'79
30	2. 16'97	16'96	- 0'01	32. 29'12	30'40	+ 1'28	16	2. 15'86	15'70	- 0'16	31. 34'19	31'00	- 3'19
Feb. 3	2. 15'82	16'06	+ 0'24	32. 30'32	29'20	- 1'12	19	2. 15'62	15'26	- 0'36	31. 35'72	31'40	- 4'32
6	2. 15'25	15'36	+ 0'11	32. 29'19	28'40	- 0'79	22				31. 32'34	31'80	- 0'54
7	2. 15'15	15'14	- 0'01	32. 27'68	28'00	+ 0'32	23	2. 14'94	14'62	- 0'32	31. 34'99	32'00	- 2'99
11	2. 14'37	14'22	- 0'15	32. 29'02	26'40	- 2'62	24	2. 14'44	14'46	+ 0'02	31. 34'32	32'20	- 2'12
12	2. 14'05	14'00	- 0'05	32. 27'58	26'20	- 1'38	Aug. 4				31. 35'14	35'00	- 0'14
13	2. 13'66	13'78	+ 0'12	32. 27'05	25'80	- 1'25	5	2. 12'42	12'42	0'00			
17	2. 13'17	12'94	- 0'23	32. 26'40	24'00	- 2'40	6	2. 12'27	12'24	- 0'03	31. 40'12	35'60	- 4'52
18				32. 24'90	23'60	- 1'30	7	2. 12'19	12'06	- 0'13	31. 38'49	35'80	- 2'69
20	2. 12'49	12'34	- 0'15	32. 23'32	22'80	- 0'52	13	2. 11'39	11'06	- 0'33	31. 39'84	37'80	- 2'04
21	2. 12'32	12'14	- 0'18	32. 22'96	22'40	- 0'56	17	2. 10'47	10'44	- 0'03	31. 39'30	39'20	- 0'10
24	2. 11'55	11'60	+ 0'05	32. 23'18	21'00	- 2'18	18				31. 40'11	39'60	- 0'51
Mar. 1	2. 10'83	10'64	- 0'19	32. 18'64	18'20	- 0'44	25	2. 9'49	9'38	- 0'11	31. 41'78	42'60	+ 0'82
2	2. 9'96	10'50	+ 0'54				27	2. 9'22	9'14	- 0'08	31. 46'07	43'40	- 2'67
4	2. 10'59	10'22	- 0'37	32. 18'65	16'60	- 2'05	28	2. 9'50	9'04	- 0'46	31. 48'89	43'80	- 5'09
5	2. 10'34	10'10	- 0'24	32. 17'00	16'20	- 0'80	30	2. 8'82	8'84	+ 0'02	31. 46'69	44'80	- 1'89
6	2. 10'33	9'98	- 0'35	32. 24'77	15'60	(- 9'17)	31				31. 45'97	45'20	- 0'77
9	2. 10'06	9'64	- 0'42	32. 18'18	14'00	- 4'18	Sept. 2	2. 8'96	8'58	- 0'38	31. 48'93	46'20	- 2'73
20	2. 9'09	8'86	- 0'23	32. 10'11	8'00	- 2'11	3	2. 8'72	8'50	- 0'22	31. 49'48	46'60	- 2'88
22	2. 8'52	8'80	+ 0'28	32. 1'65	7'00	+ 5'35	4				31. 46'07	47'00	+ 0'93
23	2. 9'10	8'78	- 0'32	32. 7'35	6'40	- 0'95	11				31. 49'46	50'40	+ 0'94
24	2. 8'70	8'76	+ 0'06	32. 10'20	6'00	- 4'20	14	2. 8'16	8'00	- 0'16	31. 55'79	52'00	- 3'79
25				32. 6'21	5'40	- 0'81	16	2. 8'21	7'98	- 0'23	31. 56'27	53'00	- 3'27
26	2. 9'19	8'76	- 0'43	32. 8'93	4'80	- 4'13	17	2. 8'14	7'98	- 0'16	31. 55'29	53'60	- 1'69
29	2. 8'88	8'78	- 0'10	32. 2'17	3'20	+ 1'03	20	2. 8'04	8'02	- 0'02			
Apr. 1	2. 9'09	8'86	- 0'23	32. 1'75	1'60	- 0'15	22				31. 62'40	56'40	- 6'00
2	2. 9'22	8'90	- 0'32	32. 3'04	1'00	- 2'04	24	2. 8'43	8'14	- 0'29	31. 58'97	57'40	- 1'57
3	2. 9'31	8'94	- 0'37	32. 3'49	0'40	- 3'09	30	2. 8'78	8'54	- 0'24	32. 1'07	0'80	- 0'27
6				31. 59'51	58'80	- 0'71	Oct. 2	2. 9'04	8'72	- 0'32	32. 3'72	1'80	- 1'92
8	2. 9'52	9'24	- 0'28	31. 57'08	57'60	+ 0'52	7				32. 6'82	4'60	- 2'22
10	2. 9'67	9'40	- 0'27	31. 59'57	56'60	- 2'97	9	2. 9'59	9'52	- 0'07	32. 9'02	5'60	- 3'42
12	2. 10'00	9'58	- 0'42	31. 56'29	55'40	- 0'89	19	2. 11'22	11'14	- 0'08	32. 13'38	11'20	- 2'18
13	2. 9'89	9'66	- 0'23	31. 57'22	55'00	- 2'22	20	2. 11'59	11'32	- 0'27	32. 13'20	11'80	- 1'40
14	2. 9'91	9'76	- 0'15	31. 57'70	54'40	- 3'30	Nov. 3				32. 24'94	19'00	- 5'94
15	2. 10'28	9'86	- 0'42	31. 56'00	53'80	- 2'20	4	2. 14'85	14'56	- 0'29	32. 26'75	19'40	- 7'35
17	2. 10'43	10'08	- 0'35	31. 50'26	52'80	+ 2'54	6	2. 15'32	15'04	- 0'28	32. 21'51	20'40	- 1'11
20	2. 10'83	10'44	- 0'39	31. 55'78	51'20	- 4'58	16				32. 30'87	24'80	- 6'07
21	2. 10'44	10'56	+ 0'12	31. 53'00	50'60	- 2'40	25				32. 27'25	28'20	+ 0'95
22	2. 10'83	10'70	- 0'13	31. 50'48	50'20	- 0'28	27	2. 19'90	19'80	- 0'10	32. 27'32	29'00	+ 1'68
23	2. 10'59	10'84	+ 0'25	31. 48'90	49'80	+ 0'90	Dec. 9	2. 21'86	21'70	- 0'16	32. 32'19	32'20	+ 0'01
24	2. 11'15	10'98	- 0'17	31. 49'49	49'20	- 0'29	11	2. 21'82	21'90	+ 0'08	32. 31'58	32'60	+ 1'02
26	2. 11'44	11'26	- 0'18	31. 47'86	48'20	+ 0'34	16	2. 22'39	22'28	- 0'11	32. 32'94	33'40	+ 0'46
28	2. 11'56	11'56	0'00	31. 45'35	47'20	+ 1'85	17				32. 34'09	33'60	- 0'49
May 3	2. 12'58	12'34	- 0'24				18	2. 22'63	22'38	- 0'25	32. 34'63	33'80	- 0'83
4	2. 12'45	12'50	+ 0'05	31. 44'56	44'60	+ 0'04	21	2. 22'66	22'46	- 0'20	32. 32'98	34'20	+ 1'22
7	2. 13'03	12'98	- 0'05	31. 43'17	43'20	+ 0'03	27	2. 22'45	22'34	- 0'11			
8	2. 13'06	13'16	+ 0'10	31. 42'02	42'80	+ 0'78	28	2. 22'18	22'22	+ 0'04	32. 36'19	34'60	- 1'59
14	2. 14'07	14'14	+ 0'07				30	2. 21'99	22'16	+ 0'17	32. 30'99	34'60	+ 3'61
15	2. 14'56	14'30	- 0'26	31. 41'83	39'80	- 2'03	31	2. 22'17	22'08	- 0'09	32. 37'04	34'60	- 2'44
18	2. 14'94	14'78	- 0'16	31. 40'13	38'60	- 1'53							
24	2. 15'80	15'68	- 0'12	31. 34'00	36'60	+ 2'60							

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1852.	m s	s	s	' "	"	"	1852.	m s	s	s	' "	"	"
Jan. 5				31. 29'30	24'96	— 4'34	July 2				31. 19'26	15'92	— 3'34
6				31. 51'39	47'48	— 3'91	27				31. 50'65	44'90	— 5'75
7				32. 11'37	6'36	— 5'01	30				30. 57'15	54'34	— 2'81
Feb. 1				31. 10'19	5'86	— 4'33	31				30. 40'38	35'48	— 4'90
3				32. 6'77	4'24	— 2'53	Aug. 29				30. 7'03	0'78	— 6'25
6				32. 60'77	56'50	— 4'27	30				29. 49'74	48'08	— 1'66
29				31. 2'75	1'00	— 1'75	Sept. 29				29. 29'78	25'48	— 4'30
Mar. 5	2. 21'56	21'10	— 0'46	30. 53'92	52'96	— 0'96	Oct. 28				29. 29'88	24'88	— 5'00
28				33. 37'08	25'86	— 11'22	31				29. 55'49	48'52	— 6'97
Apr. 4				33. 14'56	11'76	— 2'80	Nov. 26	2. 10'87	10'30	— 0'57	29. 42'03	37'40	— 4'63
May 3	2. 22'16	21'58	— 0'58	32. 19'13	13'80	— 5'33	27				29. 54'04	47'14	— 6'90
June 29				31. 45'32	38'64	— 6'68	28				29. 62'67	59'28	— 3'39
July 1							Dec. 27				30. 37'86	32'64	— 5'22

VERTICAL DIAMETERS of VENUS, compared with those of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1852.	"	"	"	1852.	"	"	"
Feb. 6	11'84	12'20	+ 0'36	July 13	55'87	55'20	— 0'67
13	14'15	12'60	— 1'55	16	56'52	56'40	— 0'12
Mar. 9	16'96	14'00	— 2'96	Aug. 4	51'24	51'40	+ 0'16
20	18'48	14'80	— 3'68	12	47'68	45'80	— 1'88
Apr. 2	18'64	16'20	— 2'44	24	42'78	38'20	— 4'58
8	18'63	17'00	— 1'63	30	36'71	34'60	— 2'11
12	7'92	17'60	(+ 9'68)	Sept. 1	34'09	33'60	— 0'49
13	21'34	17'60	— 3'74	2	36'13	33'00	— 3'13
14	18'48	17'80	— 0'68	13	29'55	28'60	— 0'95
15	18'50	18'00	— 0'50	Oct. 11	21'26	21'00	— 0'26
20	19'86	18'60	— 1'26	19	21'11	19'20	— 1'91
24	18'15	19'20	+ 1'05	Nov. 3	19'53	17'40	— 2'13
May 11	22'84	23'00	+ 0'16	5	21'37	17'00	— 4'37
14	24'69	23'80	— 0'89	26	16'45	14'80	— 1'65
15	24'52	23'80	— 0'72	29	15'57	14'60	— 0'97
24	29'18	26'80	— 2'38	Dec. 2	15'54	14'20	— 1'34
July 3	49'37	49'20	— 0'17	8	14'26	13'80	— 0'46
5	54'11	50'80	— 3'31	13	13'70	13'40	— 0'30
6	51'77	51'40	— 0'37	20	13'08	13'00	— 0'08
7	55'03	52'00	— 3'03	30	14'31	12'60	— 1'71
8	54'53	52'60	— 1'93				
12	50'29	54'80	+ 4'51				

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of MARS ; and VERTICAL DIAMETERS of MARS :
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1852.		s	s	"	"	"	1852.	s	s	s	"	"	"
Jan. 5	1.38	0.92	-0.46	15.22	12.80	-2.42	Feb. 10	1.26	0.94	-0.32	19.53	12.60	-6.93
9	1.24	0.94	-0.30	16.18	13.00	-3.18	11	1.43	0.94	-0.49	16.82	12.60	-4.22
20	1.23	0.98	-0.25	17.53	13.40	-4.13	14				18.26	12.40	-5.86
22	1.63	0.98	-0.65	18.01	13.40	-4.61	18				13.80	12.00	-1.80
23	1.28	1.00	-0.28	19.50	13.40	-6.10	20				15.51	11.80	-3.71
28	1.43	1.00	-0.43				28				17.02	11.00	-6.02
29	0.98	1.00	+0.02	18.71	13.40	-5.31							
30	1.47	1.00	-0.47	16.39	13.40	-2.99	Mar. 2	1.16	0.80	-0.36	17.63	10.80	-6.83
Feb. 3	1.20	0.98	-0.22	17.31	13.20	-4.11	3				12.76	10.60	-2.16
6	1.33	0.96	-0.37	16.29	13.00	-3.29	4				14.10	10.60	-3.50
9				20.78	12.80	-7.98	6				12.72	10.40	-2.32

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER ; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

Jan. 5	2.85	2.34	-0.51	32.61	31.40	-1.21	Apr. 13	3.17	3.08	-0.09	44.48	41.20	-3.28
7	2.48	2.36	-0.12	30.94	31.60	+0.66	16	3.22	3.10	-0.12	46.92	41.40	-5.52
8	2.48	2.36	-0.12	33.60	31.60	-2.00	19	3.44	3.12	-0.32	42.02	41.60	-0.42
9	2.28	2.38	+0.10	30.15	31.80	+1.65	20				43.32	41.60	-1.72
20	2.71	2.46	-0.25	34.93	32.60	-2.33	21	3.34	3.14	-0.20	41.63	41.80	+0.17
23				37.30	32.80	-4.50	22	3.06	3.14	+0.08	42.50	41.80	-0.70
28	2.24	2.52	+0.28	36.37	33.40	-2.97	24	3.19	3.14	-0.05	45.66	41.80	-3.86
Feb. 6	2.59	2.58	-0.01	35.77	34.40	-1.37	27	3.31	3.14	-0.17	46.18	42.00	-4.18
9	2.72	2.58	-0.14	37.69	34.40	-3.29	May 1	3.12	3.14	+0.02	44.31	42.00	-2.31
10	2.64	2.60	-0.04	33.70	34.60	+0.90	3	3.45	3.14	-0.31	44.24	42.00	-2.24
11	2.66	2.60	-0.06	36.96	34.60	-2.36	4	3.38	3.14	-0.24	43.91	42.00	-1.91
18	3.01	2.66	-0.35	36.84	35.60	-1.24	8				45.14	42.00	-3.14
19	2.97	2.66	-0.31	39.86	35.60	-4.26	10	3.25	3.14	-0.11	43.88	42.00	-1.88
29	2.82	2.76	-0.06	39.26	36.80	-2.46	14	3.61	3.14	-0.47	42.93	42.00	-0.93
Mar. 3	2.89	2.78	-0.11	39.96	37.00	-2.96	15	3.37	3.14	-0.23	46.29	42.00	-4.29
4	2.86	2.80	-0.06	40.37	37.20	-3.17	31	3.18	3.08	-0.10	45.48	41.60	-3.88
5				43.75	37.20	-6.55	June 1				41.78	41.40	-0.38
18	3.30	2.92	-0.38	40.25	38.80	-1.45	2	2.89	3.06	+0.17	44.29	41.40	-2.89
21	2.98	2.94	-0.04	38.91	39.20	+0.29	4	3.31	3.06	-0.25	45.37	41.20	-4.17
22	3.06	2.94	-0.12	43.13	39.20	-3.93	8	3.16	3.04	-0.12	42.06	41.00	-1.06
23	3.05	2.94	-0.11	41.30	39.40	-1.90	16	3.13	2.98	-0.15	42.14	40.20	-1.94
Apr. 1	3.15	3.02	-0.13	45.23	40.20	-5.03	22	3.14	2.94	-0.20	40.91	39.60	-1.31
2	3.22	3.02	-0.20	41.62	40.20	-1.42	23	2.96	2.94	-0.02	42.54	39.60	-2.94
8	3.14	3.06	-0.08	43.92	40.80	-3.12	24	3.06	2.92	-0.14	41.81	39.60	-2.21
10	2.95	3.08	+0.13	43.20	41.00	-2.20	26	2.95	2.92	-0.03	38.47	39.40	+0.93
							30	2.83	2.90	+0.07	42.02	39.00	-3.02

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN ; and VERTICAL DIAMETERS of SATURN :
compared with those of the Nautical Almanac.

Jan. 5	1.06	1.22	+0.16	16.92	16.60	-0.32	Oct. 18	1.61	1.36	-0.25	19.82	18.40	-1.42
6	0.97	1.22	+0.25				19	1.50	1.36	-0.14	23.17	18.40	-4.77
7	1.05	1.22	+0.17	20.24	16.60	-3.64	25	1.41	1.36	-0.05	21.71	18.40	-3.31
9	1.36	1.22	-0.14	17.65	16.60	-1.05	26	1.49	1.36	-0.13	19.57	18.40	-1.17
10	1.44	1.22	-0.22	17.68	16.60	-1.08							
19	1.15	1.20	+0.05	17.91	16.40	-1.51	Nov. 2	1.48	1.36	-0.12	18.53	18.40	-0.13
22	1.04	1.20	+0.16	18.21	16.40	-1.81	3	1.52	1.36	-0.16	21.24	18.40	-2.84
23	1.11	1.20	+0.09	19.05	16.40	-2.65	18	1.45	1.34	-0.11	19.75	18.40	-1.35
29	1.19	1.18	-0.01	18.57	16.20	-2.37	19	1.35	1.34	-0.01	20.52	18.40	-2.12
Feb. 6	1.21	1.16	-0.05	15.58	15.80	+0.22	27	1.56	1.34	-0.22	18.50	18.20	-0.30
Sept. 1	1.33	1.28	-0.05	19.98	17.20	-2.78	Dec. 8	1.60	1.32	-0.28	20.02	18.00	-2.02
8	Ring observed			19.47	17.40	-2.07	11	1.36	1.32	-0.04	20.17	18.00	-2.17
21	1.58	1.32	-0.26	19.14	17.80	-1.34	15	1.28	1.32	+0.04	19.05	18.00	-1.05
Oct. 5	1.29	1.34	+0.05	20.66	18.20	-2.46	21	1.29	1.30	+0.01	19.53	17.80	-1.73
6	1.32	1.34	+0.02	..	..	..	28	1.64	1.28	-0.36	19.84	17.60	-2.24
11	1.40	1.34	-0.06	22.39	18.20	-4.19	30	1.37	1.28	-0.09	19.05	17.40	-1.65
							31	1.37	1.28	-0.09	19.25	17.40	-1.85

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

Mean Solar Time of Observation.					R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852.	d	h	m	s	h	m	s	°	'	"
Jan.	2.	0.	4.	5.7	18. 49. 15.27	15.11	— 0.16	112. 58. 30.31	29.40	— 0.91
	3.	0.	4.	33.8	18. 53. 39.99	39.73	— 0.26	112. 53. 3.11	4.10	+ 0.99
	6.	0.	5.	55.3	19. 6. 51.39	51.16	— 0.23	112. 34. 7.97	4.90	— 3.07
	7.	0.	6.	21.7	19. 11. 14.30	14.08	— 0.22	112. 26. 49.57	51.40	+ 1.83
	8.	0.	6.	47.6	19. 15. 36.93	36.51	— 0.42	112. 19. 9.77	11.30	+ 1.53
	16.	0.	9.	53.8	19. 50. 15.95	15.96	+ 0.01	111. 2. 24.80	25.00	+ 0.20
	22.	0.	11.	46.3	20. 15. 48.32	47.94	— 0.38	109. 47. 48.16	49.40	+ 1.24
	23.	0.	12.	2.4	20. 20. 1.04	0.64	— 0.40	109. 34. 3.13	4.10	+ 0.97
	26.	0.	12.	45.5	20. 32. 33.88	33.92	+ 0.04	108. 50. 36.93	39.40	+ 2.47
	28.	0.	13.	10.6	20. 40. 52.19	52.00	— 0.19	108. 19. 55.37	59.60	+ 4.23
	29.	0.	13.	22.0	20. 44. 60.16	59.79	— 0.37	108. 4. 8.35	9.80	+ 1.45
	30.	0.	13.	32.3	20. 49. 7.04	6.73	— 0.31	107. 47. 59.60	60.70	+ 1.10
Feb.	3.	0.	14.	5.3	21. 5. 26.36	26.07	— 0.29	106. 40. 16.09	18.70	+ 2.61
	6.	0.	14.	21.3	21. 17. 32.03	31.84	— 0.19	105. 46. 26.27	28.80	+ 2.53
	7.	0.	14.	25.1	21. 21. 32.38	32.14	— 0.24	105. 27. 58.37	59.30	+ 0.93
	11.	0.	14.	32.2	21. 37. 25.73	25.45	— 0.28	104. 11. 26.91	28.00	+ 1.09
	12.	0.	14.	32.0	21. 41. 22.06	21.86	— 0.20	103. 51. 43.03	43.80	+ 0.77
	13.	0.	14.	31.1	21. 45. 17.80	17.52	— 0.28	103. 31. 44.65	45.90	+ 1.25
	17.	0.	14.	20.3	22. 0. 53.12	52.85	— 0.27	102. 9. 43.51	45.40	+ 1.89
	18.	0.	14.	15.5	22. 4. 45.04	44.91	— 0.13	101. 48. 44.79	45.10	+ 0.31
	20.	0.	14.	4.8	22. 12. 27.25	26.96	— 0.29	101. 6. 10.61	11.20	+ 0.59
	21.	0.	13.	58.1	22. 16. 17.12	16.97	— 0.15	100. 44. 37.66	38.60	+ 0.94
	24.	0.	13.	34.7	22. 27. 43.42	43.09	— 0.33	99. 39. 1.77	2.60	+ 0.83
	25.	0.	13.	25.6	22. 31. 30.72	30.54	— 0.18	99. 16. 52.52	52.80	+ 0.28
Mar.	1.	0.	12.	31.4	22. 50. 19.09	18.96	— 0.13	97. 24. 7.20	8.30	+ 1.10
	2.	0.	12.	18.9	22. 54. 3.13	3.01	— 0.12	97. 1. 13.06	15.10	+ 2.04
	4.	0.	11.	52.7	23. 1. 29.97	29.66	— 0.31	96. 15. 10.07	11.70	+ 1.63
	5.	0.	11.	38.5	23. 5. 12.32	12.29	— 0.03	95. 51. (54.47)	62.20	(+ 7.73)
	6.	0.	11.	24.3	23. 8. 54.59	54.50	— 0.09	95. 28. 47.70	47.90	+ 0.20
	9.	0.	10.	39.1	23. 19. 58.93	58.78	— 0.15	94. 18. 39.23	40.50	+ 1.27
	20.	0.	7.	31.7	0. 0. 13.12	13.02	— 0.10	89. 58. 35.37	35.80	+ 0.43
	22.	0.	6.	55.6	0. 7. 29.98	29.69	— 0.29	89. 11. 13.55	14.20	+ 0.65
	23.	0.	6.	37.0	0. 11. 7.95	7.87	— 0.08	88. 47. 34.06	35.60	+ 1.54
	24.	0.	6.	18.8	0. 14. 46.21	45.99	— 0.22	88. 23. 55.72	58.90	+ 3.18
	25.	0.	6.	0.2	0. 18. 24.14	24.05	— 0.09	88. 0. 24.61	24.50	— 0.11
	26.	0.	5.	41.6	0. 22. 2.02	2.08	+ 0.06	87. 36. 51.59	52.80	+ 1.21
	29.	0.	4.	46.3	0. 32. 56.28	56.11	— 0.17	86. 26. 35.79	37.60	+ 1.81
April	1.	0.	3.	51.2	0. 43. 50.64	50.52	— 0.12	85. 16. 59.86	59.60	— 0.26
	2.	0.	3.	33.1	0. 47. 29.01	28.83	— 0.18	84. 53. 56.01	56.80	+ 0.79
	3.	0.	3.	14.9	0. 51. 7.37	7.28	— 0.09	84. 30. 59.20	59.50	+ 0.30
	6.	0.	2.	21.4	1. 2. 4.00	3.62	(— 0.38)	83. 22. 43.37	43.50	+ 0.13
	8.	0.	1.	47.3	1. 9. 22.31	22.23	— 0.08	82. 37. 43.79	46.00	+ 2.21
	10.	0.	1.	14.2	1. 16. 42.18	41.88	— 0.30	81. 53. 15.68	18.00	+ 2.32
	12.	0.	0.	41.5	1. 24. 2.51	2.71	+ 0.20	81. 9. 21.85	22.20	+ 0.35
	13.	0.	0.	26.3	1. 27. 43.86	43.62	— 0.24	80. 47. 40.90	37.20	— 3.70
	14.	0.	0.	10.9	1. 31. 24.89	24.87	— 0.02	80. 26. 0.73	1.20	+ 0.47
	14.	23.	59.	56.0	1. 35. 6.51	6.49	— 0.02	80. 4. 38.55	34.50	— 4.05
	16.	23.	59.	27.1	1. 42. 30.72	30.85	+ 0.13	79. 22. 14.65	10.70	— 3.95
	19.	23.	58.	47.2	1. 53. 40.36	40.37	+ 0.01	78. 19. 60.01	54.00	— 6.01
	20.	23.	58.	34.9	1. 57. 24.51	24.39	— 0.12	77. 59. 30.61	30.90	+ 0.29
	21.	23.	58.	22.7	2. 1. 8.91	8.84	— 0.07	77. 39. 23.99	19.60	— 4.39
	22.	23.	58.	11.4	2. 4. 53.85	53.73	— 0.12	77. 19. 25.38	20.60	— 4.78
	23.	23.	58.	0.0	2. 8. 39.20	39.08	— 0.12	76. 59. 35.52	34.10	— 1.42
	25.	23.	57.	39.2	2. 16. 11.43	11.16	— 0.27	76. 20. 38.88	40.00	+ 1.12
	27.	23.	57.	19.9	2. 23. 45.35	45.18	— 0.17	75. 42. 38.03	40.00	+ 1.97
May	2.	23.	56.	41.3	2. 42. 49.30	49.18	— 0.12	74. 11. 53.16	53.50	+ 0.34
	3.	23.	56.	35.2	2. 46. 39.77	39.60	— 0.17	73. 54. 30.02	30.00	— 0.02
	6.	23.	56.	20.2	2. 58. 14.35	14.27	— 0.08	73. 3. 56.66	56.50	— 0.16
	7.	23.	56.	16.7	3. 2. 7.37	6.99	— 0.38	72. 47. 37.46	38.60	+ 1.14
	13.	23.	56.	6.0	3. 25. 35.96	35.76	— 0.20	71. 16. 0.69	0.30	— 0.39
	14.	23.	56.	6.3	3. 29. 32.81	32.63	— 0.18	71. 1. 48.93	48.20	— 0.73

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER—*continued.*

Mean Solar Time of Observation.		R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852.	d h m s	h m s	s	s	° ' "	"	"
May	17. 23. 56. 10.2	3. 41. 26.45	26.71	(+ 0.26)	70. 21. 8.14	7.70	— 0.44
	23. 23. 56. 34.0	4. 5. 29.88	29.65	— 0.23	69. 8. 55.78	53.30	— 2.48
June	1. 23. 57. 41.6	4. 42. 6.44	6.20	— 0.24	67. 44. 58.26	58.50	+ 0.24
	13. 23. 59. 56.7	5. 31. 40.64	40.28	— 0.36	66. 42. 6.91	6.70	— 0.21
	23. 0. 1. 53.1	....	....	....	66. 33. 27.08	29.80	+ 2.72
	24. 0. 2. 6.1	6. 13. 15.94	15.78	— 0.16	66. 34. 38.66	36.40	— 2.26
July	3. 0. 3. 53.6	6. 50. 32.75	32.54	— 0.21	67. 3. 3.23	2.20	— 1.03
	5. 0. 4. 14.6	6. 58. 46.94	46.79	— 0.15	67. 13. 47.72	47.80	+ 0.08
	6. 0. 4. 24.5	7. 2. 53.48	53.44	— 0.04	67. 19. 47.74	46.20	— 1.54
	7. 0. 4. 34.5	7. 6. 59.94	59.74	— 0.20	67. 26. 9.82	8.20	— 1.62
	9. 0. 4. 52.8	7. 15. 11.46	11.25	— 0.21	67. 40. 2.67	2.20	— 0.47
	13. 0. 5. 24.7	7. 31. 29.66	29.41	— 0.25	68. 12. 26.78	26.50	— 0.28
	15. 0. 5. 37.4	7. 39. 36.05	35.77	— 0.28	68. 30. 56.01	53.70	— 2.31
	16. 0. 5. 43.6	7. 43. 38.32	38.21	— 0.11	68. 40. 41.03	40.40	— 0.63
	19. 0. 5. 58.0	7. 55. 42.38	42.38	0.00	69. 12. 10.63	10.10	— 0.53
	22. 0. 6. 7.7	8. 7. 41.80	41.52	— 0.28	69. 46. 50.00	49.20	— 0.80
	23. 0. 6. 9.3	8. 11. 40.01	40.05	+ 0.04	69. 59. 4.17	3.10	— 1.07
	24. 0. 6. 10.9	8. 15. 38.16	37.99	— 0.17	70. 11. 37.92	37.10	— 0.82
	29. 0. 6. 8.6	8. 35. 18.62	18.50	— 0.12	71. 19. 19.04	17.60	— 1.44
	31. 0. 6. 3.2	8. 43. 6.30	6.41	+ 0.11	71. 48. 36.92	32.50	— 4.42
Aug.	2. 0. 5. 56.0	8. 50. 52.22	51.91	— 0.31	....	....	....
	4. 0. 5. 46.0	8. 58. 35.26	35.04	— 0.22	72. 50. 35.03	34.00	— 1.03
	5. 0. 5. 40.3	9. 2. 26.08	25.72	— 0.36	73. 6. 49.57	46.90	— 2.67
	6. 0. 5. 33.6	9. 6. 15.97	15.82	— 0.15	73. 23. 19.52	16.20	— 3.32
	7. 0. 5. 26.6	9. 10. 5.52	5.35	— 0.17	73. 40. 2.74	1.60	— 1.14
	13. 0. 4. 32.8	9. 32. 50.84	50.77	— 0.07	75. 25. 58.54	56.70	— 1.84
	17. 0. 3. 45.8	9. 47. 50.49	50.24	— 0.25	76. 41. 17.96	17.60	— 0.36
	18. 0. 3. 33.3	9. 51. 33.95	33.80	— 0.15	77. 0. 41.56	40.40	— 1.16
	25. 0. 1. 49.0	10. 17. 25.23	25.10	— 0.13	79. 21. 47.99	46.80	— 1.19
	27. 0. 1. 15.1	10. 24. 44.37	44.37	0.00	80. 3. 43.10	41.10	— 2.00
	28. 0. 0. 57.6	10. 28. 23.39	23.42	+ 0.03	80. 24. 52.35	52.50	+ 0.15
	30. 0. 0. 21.8	10. 35. 40.55	40.44	— 0.11	81. 7. 43.96	42.40	— 1.56
	31. 0. 0. 3.3	10. 39. 18.63	18.47	— 0.16	81. 29. 21.30	20.30	— 1.00
Sept.	1. 23. 59. 25.3	10. 46. 33.62	33.64	+ 0.02	82. 13. 2.67	0.40	— 2.27
	2. 23. 59. 6.1	10. 50. 10.93	10.83	— 0.10	82. 35. 2.72	2.00	— 0.72
	3. 23. 58. 46.5	10. 53. 47.76	47.77	+ 0.01	82. 57. 12.35	11.00	— 1.35
	10. 23. 56. 24.4	....	....	....	85. 35. 12.03	11.40	— 0.63
	13. 23. 55. 21.8	11. 29. 48.11	48.06	— 0.05	86. 44. 13.57	11.80	— 1.77
	15. 23. 54. 39.8	11. 36. 59.04	59.00	— 0.04	87. 30. 32.19	30.80	— 1.39
	16. 23. 54. 19.0	11. 40. 34.72	34.43	— 0.29	87. 53. 46.92	44.90	— 2.02
	19. 23. 53. 14.8	11. 51. 20.87	20.79	— 0.08	....	....	....
	21. 23. 52. 33.6	11. 58. 31.87	31.94	+ 0.07	89. 50. 29.14	27.00	— 2.14
	23. 23. 51. 52.4	12. 5. 43.66	43.49	— 0.17	90. 37. 18.01	16.00	— 2.01
	29. 23. 49. 52.2	12. 27. 22.38	22.29	— 0.09	92. 57. 36.65	35.90	— 0.75
Oct.	1. 23. 49. 14.0	12. 34. 37.21	37.26	+ 0.05	93. 44. 13.23	11.40	— 1.83
	6. 23. 47. 45.2	12. 52. 50.96	50.87	— 0.09	95. 39. 51.91	50.70	— 1.21
	8. 23. 47. 13.1	13. 0. 11.48	11.23	— 0.25	96. 25. 40.51	39.30	— 1.21
	12. 23. 46. 13.1	13. 14. 57.92	57.74	— 0.18	97. 56. 14.69	13.10	— 1.59
	17. 23. 45. 10.8	13. 33. 38.16	37.95	— 0.21	99. 46. 56.49	53.90	— 2.59
	18. 23. 44. 59.9	13. 37. 23.84	23.75	— 0.09	100. 8. 38.23	37.80	— 0.43
	19. 23. 44. 49.7	13. 41. 10.15	10.17	+ 0.02	100. 30. 12.77	12.60	— 0.17
Nov.	2. 23. 43. 42.1	....	....	....	105. 12. 53.92	52.30	— 1.62
	3. 23. 43. 43.1	14. 39. 11.72	11.67	— 0.05	105. 31. 25.83	24.80	— 1.03
	5. 23. 43. 47.7	14. 47. 9.41	9.42	+ 0.01	106. 7. 44.44	43.70	— 0.74
	14. 23. 44. 51.0	15. 23. 42.06	41.70	(— 0.36)	....	....	....
	15. 23. 45. 2.2	15. 27. 49.71	49.52	— 0.19	108. 52. 6.89	5.40	— 1.49
	24. 23. 47. 19.1	16. 5. 35.93	35.95	+ 0.02	110. 51. 24.40	25.10	+ 0.70
	26. 23. 47. 58.1	16. 14. 8.16	8.02	— 0.14	111. 13. 45.90	46.90	+ 1.00
	30. 23. 49. 24.2	16. 31. 20.74	20.64	— 0.10	111. 53. 38.71	39.70	+ 0.99

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Dec. 8. 23. 52. 46.2	17. 6. 15.77	15.58	— 0.19	112. 52. 60.59	59.80	— 0.79
10. 23. 53. 41.8	17. 15. 4.62	4.28	— 0.34	113. 3. 22.96	23.20	+ 0.24
15. 23. 56. 6.0	17. 37. 12.00	11.82	— 0.18	113. 21. 17.71	18.00	+ 0.29
16. 23. 56. 35.3	17. 41. 37.96	38.02	+ 0.06	113. 23. 27.22	29.00	+ 1.78
17. 23. 57. 5.1	17. 46. 4.40	4.38	— 0.02	113. 25. 13.53	11.80	— 1.73
20. 23. 58. 34.6	17. 59. 23.84	24.00	+ 0.16	113. 27. 31.38	30.60	— 0.78
27. 0. 1. 33.8	18. 26. 2.80	2.81	+ 0.01	113. 19. 22.62	23.70	+ 1.08
28. 0. 2. 3.4	18. 30. 29.07	28.87	— 0.20	113. 16. 23.56	23.90	+ 0.34
30. 0. 3. 1.7	18. 39. 20.69	20.36	— 0.33	113. 8. 59.05	60.40	+ 1.35
31. 0. 3. 30.3	18. 43. 45.86	45.74	— 0.12	113. 4. 38.80	36.90	— 1.90

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER.

Jan. 3. 9. 8. 58.1	3. 59. 33.80	34.18	+ 0.38	73. 18. 36.81	30.90	— 5.91
4. 9. 59. 51.2	4. 54. 31.78	32.39	+ 0.61	70. 16. 8.75	1.80	— 6.95
5. 10. 54. 15.6	5. 53. 1.62	2.31	+ 0.69	68. 15. 49.09	42.90	— 6.19
6. 11. 51. 28.8	6. 54. 20.83	21.72	+ 0.89	67. 33. 52.65	48.70	— 3.95
7. 12. 50. 6.6	7. 57. 4.64	5.79	+ 1.15	68. 20. 44.73	42.30	— 2.43
9. 14. 45. 7.5	10. 0. 17.72	18.80	+ 1.08	74. 12. 6.49	5.30	— 1.19
11. 16. 31. 42.0	11. 55. 2.77	3.81	+ 1.04	84. 4. 14.21	18.10	+ 3.89
16. 20. 47. 1.3	16. 30. 46.71	47.51	+ 0.80	....	...	...
25. 3. 27. 36.3	23. 44. 0.16	0.06	— 0.10	96. 58. 57.45	59.30	+ 1.85
26. 4. 8. 55.5	0. 29. 22.67	22.58	— 0.09	92. 25. 50.37	51.70	+ 1.33
28. 5. 31. 7.4	1. 59. 41.17	41.05	— 0.12	83. 13. 60.73	57.90	— 2.83
29. 6. 13. 52.2	2. 46. 29.56	29.60	+ 0.04	78. 52. 60.66	54.30	— 6.36
30. 6. 58. 57.3	3. 35. 38.59	38.79	+ 0.20	74. 55. 22.77	15.90	— 6.87
Feb. 1. 8. 39. 0.2	5. 23. 51.03	51.51	+ 0.48	69. 4. 11.01	2.20	— 8.81
2. 9. 34. 21.1	6. 23. 18.80	19.48	+ 0.68	67. 42. 48.84	47.60	— 1.24
3. 10. 32. 27.3	7. 25. 29.88	30.63	+ 0.75	67. 45. 13.22	9.30	— 3.92
6. 13. 27. 52.2	10. 33. 13.28	14.52	+ 1.24	76. 42. 56.86	58.50	+ 1.64
9. 16. 7. 55.6	13. 25. 32.63	33.43	+ 0.80	93. 24. 45.67	48.50	+ 2.83
10. 16. 59. 21.7	14. 21. 3.74	4.17	+ 0.43	....	...	...
11. 17. 51. 6.7	15. 16. 53.83	54.40	+ 0.57	103. 42. 57.08	62.20	+ 5.12
24. 3. 27. 33.3	1. 42. 13.80	13.55	— 0.25	....	...	...
25. 4. 9. 18.8	2. 28. 2.64	2.42	— 0.22	80. 21. 48.16	46.10	— 2.06
27. 5. 38. 36.9	4. 5. 28.56	28.62	+ 0.06	72. 42. 27.45	23.70	— 3.75
29. 7. 19. 51.2	5. 54. 52.62	52.98	+ 0.36	68. 1. 65.55	59.40	— 6.15
March 2. 9. 12. 49.2	7. 56. 2.24	3.09	+ 0.85	68. 12. 51.60	49.40	— 2.20
3. 10. 11. 19.6	8. 58. 38.84	39.51	+ 0.67	70. 31. 31.08	27.50	— 3.58
4. 11. 9. 26.1	10. 0. 51.38	52.28	+ 0.90	74. 15. 41.68	40.00	— 1.68
5. 12. 6. 17.3	11. 1. 48.56	49.47	+ 0.91	79. 10. 7.99	10.10	+ 2.11
6. 13. 1. 39.8	12. 1. 16.69	17.42	+ 0.73	84. 51. 38.77	43.60	+ 4.83
28. 6. 4. 32.8	6. 29. 45.29	45.56	+ 0.27	67. 14. 60.92	55.90	— 5.02
30. 7. 55. 45.9	8. 29. 9.78	10.90	+ 1.12	69. 2. 29.99	23.50	— 6.49
April 1. 9. 48. 25.2	10. 30. 0.72	1.38	+ 0.66	76. 21. 10.03	6.70	— 3.33
2. 10. 43. 42.1	11. 29. 23.23	24.10	+ 0.87	81. 40. 18.16	15.00	— 3.16
3. 11. 38. 21.3	12. 28. 7.96	8.79	+ 0.83	87. 38. 5.68	5.90	+ 0.22
4. 12. 32. 52.4	13. 26. 44.55	45.21	+ 0.66	93. 47. 38.12	42.90	+ 4.78
5. 13. 27. 50.4	14. 25. 48.10	48.72	+ 0.62	99. 40. 31.75	34.80	+ 3.05
9. 17. 14. 6.6	18. 28. 27.71	27.75	+ 0.04	....	...	...
24. 3. 59. 42.8	6. 11. 1.73	2.08	+ 0.35	67. 13. (57.28)	33.60	(— 23.68)
26. 5. 47. 42.2	8. 7. 12.01	12.40	+ 0.39	68. 2. 12.70	5.80	— 6.90
27. 6. 42. 27.4	9. 6. 2.77	3.24	+ 0.47	70. 27. 33.59	27.00	— 6.59
May 1. 10. 16. 25.0	12. 56. 21.70	22.31	+ 0.61	90. 32. 16.13	13.80	— 2.33
2. 11. 10. 18.6	13. 54. 20.68	21.39	+ 0.71	96. 36. 50.21	53.40	+ 3.19
3. 12. 5. 39.1	14. 53. 46.83	47.54	+ 0.71	102. 16. 26.63	29.70	+ 3.07
4. 13. 2. 43.9	15. 54. 57.57	58.31	+ 0.74	107. 3. 56.08	55.80	— 0.28
5. 14. 1. 13.6	.....	...	...	110. 36. 17.33	18.70	+ 1.37

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER—*continued.*

Mean Solar Time of Observation.	R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N.P.D. from Observation.	Seconds of Tabular N.P.D.	Apparent Error of Tables in N.P.D.
1852. d h m s	h m s	s	s	° ' "	"	"
May 7. 15. 57. 54.7	19. 2. 26.82	27.26	+ 0.44	113. 8. 50.13	51.50	+ 1.37
24. 4. 38. 12.3	8. 47. 54.47	55.10	+ 0.63	69. 22. 41.22	37.60	— 3.62
31. 10. 45. 54.4	15. 24. 12.65	13.25	+ 0.60	104. 47. 36.55	39.40	+ 2.85
June 4. 14. 39. 36.9	19. 34. 19.72	20.32	+ 0.60	112. 56. 21.74	20.70	— 1.04
22. 4. 21. 18.8	10. 25. 18.11	19.06	+ 0.95	75. 28. 42.22	41.10	— 1.12
26. 7. 43. 18.5	14. 3. 37.19	37.58	+ 0.39	97. 24. 24.46	25.40	+ 0.94
27. 8. 35. 40.6	15. 0. 4.48	4.71	+ 0.23	102. 44. 29.83	33.10	+ 3.27
29. 10. 27. 21.8	16. 59. 57.15	57.48	+ 0.33	110. 44. 56.22	62.30	+ 6.08
July 1. 12. 24. 27.6	19. 5. 15.28	15.73	+ 0.45	113. 15. 37.65	42.90	+ 5.25
2. 13. 21. 16.1	20. 6. 9.69	10.28	+ 0.59	112. 14. 13.58	20.40	+ 6.82
3. 14. 14. 59.9	21. 3. 58.84	59.23	+ 0.39	109. 55. 0.07	4.00	+ 3.93
4. 15. 5. 4.1	21. 58. 7.88	8.58	+ 0.70	106. 35. 13.64	12.60	— 1.04
5. 15. 51. 39.5	22. 48. 47.42	48.29	+ 0.87	....	...	...
6. 16. 35. 25.5	23. 36. 37.23	37.69	+ 0.46	98. 2. 33.61	29.00	— 4.61
8. 17. 58. 7.7	1. 7. 26.08	26.42	+ 0.34	88. 28. 32.30	26.30	— 6.00
9. 18. 39. 3.2	1. 52. 24.87	25.07	+ 0.20	83. 43. 45.03	37.40	— 7.63
10. 19. 20. 59.8	2. 38. 24.96	25.19	+ 0.23	79. 12. 15.89	10.20	— 5.69
21. 4. 0. 7.9	....	...	...	84. 12. 28.84	33.20	+ 4.36
22. 4. 50. 18.0	12. 52. 38.73	39.68	+ 0.95	....	...	...
23. 5. 40. 25.3	13. 46. 50.83	51.53	+ 0.70	95. 44. 17.78	18.90	+ 1.12
27. 9. 15. 40.7	17. 38. 27.86	28.51	+ 0.65	112. 12. 12.36	16.10	+ 3.74
30. 12. 4. 27.2	20. 39. 31.74	32.23	+ 0.49	111. 2. 6.15	9.80	+ 3.65
31. 12. 56. 2.4	21. 35. 6.97	7.77	+ 0.80	108. 5. 36.39	38.90	+ 2.51
Aug. 2. 14. 29. 17.7	23. 16. 35.67	36.44	+ 0.77	99. 55. 8.93	4.10	— 4.83
3. 15. 12. 8.7	0. 3. 30.33	30.89	+ 0.56	95. 12. 19.18	16.40	— 2.78
4. 15. 53. 32.7	0. 48. 57.68	58.22	+ 0.54	90. 21. 27.44	23.70	— 3.74
7. 17. 58. 25.9	3. 6. 1.04	1.47	+ 0.43	76. 37. 34.39	23.90	— 10.49
9. 19. 31. 3.0	4. 46. 46.46	46.66	+ 0.20	69. 46. 26.40	20.80	— 5.60
22. 6. 14. 55.2	16. 19. 43.11	43.50	+ 0.39	108. 50. 3.21	1.00	— 2.21
26. 9. 57. 37.1	20. 18. 47.78	48.64	+ 0.86	111. 52. 38.04	39.00	+ 0.96
27. 10. 49. 27.6	....	...	...	109. 19. 24.52	22.90	— 1.62
28. 11. 38. 17.1	22. 7. 37.44	38.46	+ 1.02	105. 48. 53.30	52.20	— 1.10
29. 12. 24. 12.9	22. 57. 37.34	38.47	+ 1.13	101. 37. 5.45	1.40	— 4.05
30. 13. 7. 45.5	23. 45. 13.66	14.80	+ 1.14	96. 58. 57.19	50.70	— 6.49
31. 13. 49. 38.4	0. 31. 9.99	10.90	+ 0.91	92. 7. 39.93	33.20	— 6.73
Sept. 1. 14. 30. 40.6	1. 16. 15.43	16.13	+ 0.70	87. 14. 38.20	33.80	— 4.40
2. 15. 11. 43.3	2. 1. 21.43	21.89	+ 0.46	82. 29. 62.26	58.40	— 3.86
23. 8. 46. 12.4	20. 57. 34.86	35.22	+ 0.36	110. 23. 0.16	0.70	+ 0.54
24. 9. 35. 21.2	21. 50. 48.26	48.61	+ 0.35	107. 8. 45.71	44.60	— 1.11
25. 10. 21. 34.6	22. 41. 5.83	6.45	+ 0.62	103. 8. 46.30	47.10	+ 0.80
29. 13. 9. 21.9	1. 45. 6.88	7.99	+ 1.11	84. 1. 23.75	15.40	— 8.35
Oct. 2. 15. 18. 23.3	4. 6. 19.11	19.43	+ 0.32	71. 36. 55.98	50.30	— 5.68
3. 16. 5. 29.8	4. 57. 29.94	30.39	+ 0.45	68. 47. 25.83	18.50	— 7.33
4. 16. 55. 8.0	5. 51. 12.89	13.27	+ 0.38	66. 55. 64.54	57.80	— 6.74
6. 18. 40. 39.6	7. 44. 54.86	55.90	+ 1.04	66. 49. 37.41	28.20	— 9.21
18. 4. 52. 8.3	18. 41. 26.14	26.89	+ 0.75	113. 51. 25.63	31.00	+ 5.37
19. 5. 49. 6.4	19. 42. 30.11	30.82	+ 0.71	113. 19. 45.51	49.20	+ 3.69
20. 6. 43. 1.2	20. 40. 30.35	30.96	+ 0.61	111. 26. 12.33	14.30	+ 1.97
23. 9. 4. 34.2	23. 14. 16.22	16.73	+ 0.51	100. 13. 29.37	28.60	— 0.77
24. 9. 46. 43.2	0. 0. 28.71	29.17	+ 0.46	95. 27. 52.14	50.10	— 2.04
25. 10. 27. 41.5	0. 45. 30.37	30.87	+ 0.50	90. 31. 58.32	53.10	— 5.22
26. 11. 8. 20.2	1. 30. 12.24	12.89	+ 0.65	85. 36. 13.19	8.80	— 4.39
28. 12. 31. 47.1	3. 1. 45.96	46.86	+ 0.90	76. 26. 47.35	39.20	— 8.15
29. 13. 15. 55.5	3. 49. 58.18	59.09	+ 0.91	72. 34. 38.13	31.30	— 6.83
31. 14. 50. 58.6	5. 33. 10.05	10.64	+ 0.59	67. 13. 7.14	1.20	— 5.94
Nov. 2. 16. 33. 58.3	7. 24. 19.75	20.18	+ 0.43	66. 13. 8.75	3.50	— 5.25
3. 17. 26. 50.5	8. 21. 17.14	17.89	+ 0.75	67. 38. 42.65	36.10	— 6.55
17. 5. 28. 2.4	21. 15. 42.73	43.10	+ 0.37	109. 51. 4.96	8.10	+ 3.14
18. 6. 17. 14.7	22. 8. 59.55	60.06	+ 0.51	106. 12. 43.31	46.30	+ 2.99

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER—*concluded.*

Mean Solar Time of Observation.					R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852.	d	h	m	s	h	m	s	°	'	"
Nov.	24.	10.	29.	58.9	2. 46.	4.82	5.24	77.	53.	54.37
	26.	11.	59.	23.8	4. 23.	37.51	38.11	70.	19.	51.73
	27.	12.	47.	43.5	5. 16.	1.63	2.33	67.	44.	40.76
	28.	13.	38.	17.0	6. 10.	40.08	40.80	66.	13.	26.54
	29.	14.	30.	23.6	7. 6.	51.73	52.35	65.	55.	29.79
	30.	15.	23.	4.9	8. 3.	38.21	38.67	66.	55.	35.16
Dec.	2.	17.	6.	43.3	9. 55.	26.80	27.42	72.	41.	10.05
	15.	4.	8.	32.3	21. 46.	23.24	23.94	107.	58.	59.61
	17.	5.	41.	53.4	23. 27.	52.80	53.22	99.	8.	49.85
	18.	6.	24.	15.8	0. 14.	18.68	19.03	94.	12.	38.70
	20.	7.	45.	48.6	1. 43.	57.97	58.19	84.	15.	63.93
	21.	8.	27.	2.1	2. 29.	14.87	15.38	79.	33.	63.73
	27.	13.	18.	29.8	7. 45.	9.75	10.36	66.	26.	59.39
	28.	14.	11.	47.0	8. 42.	32.29	32.78	68.	21.	25.05
	29.	15.	3.	57.5	....	...	...	71.	30.	31.51
	30.	15.	54.	35.0	10. 33.	30.29	30.78	75.	43.	18.57

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

Feb.	2. 22. 32. 18.9	19. 23. 23.19	22.94	— 0.25	111. 55. 22.23	27.20	+ 4.97
	19. 23. 5. 41.7	21. 3. 52.91	52.58	— 0.33	108. 37. 59.15	62.40	+ 3.25
	20. 23. 8. 6.5	21. 10. 14.65	14.27	— 0.38	108. 14. 42.02	46.20	+ 4.18
Mar.	5. 23. 44. 48.0	22. 42. 13.93	13.88	— 0.05	100. 28. 30.88	30.10	— 0.78
April	2. 1. 4. 50.3	1. 48. 56.30	56.45	+ 0.15	77. 0. 19.12	14.40	— 4.72
	3. 1. 6. 41.5	1. 54. 44.39	44.61	+ 0.22	76. 16. 57.38	53.50	— 3.88
	8. 1. 11. 48.5	2. 19. 34.97	34.71	— 0.26	73. 19. 46.99	41.70	— 5.29
	12. 1. 9. 57.6	2. 33. 30.02	30.20	+ 0.18	71. 50. 26.27	22.70	— 3.57
	13. 1. 8. 35.3	2. 36. 4.02	3.86	— 0.16	71. 35. 48.33	43.50	— 4.83
	15. 1. 4. 41.8	2. 40. 2.99	2.50	— 0.49	....	...	...
July	6. 0. 42. 41.2	7. 41. 16.40	17.14	+ 0.74	66. 44. 13.34	13.10	— 0.24
	7. 0. 47. 26.4	7. 49. 58.91	59.50	+ 0.59	67. 4. 31.61	31.50	— 0.11
	8. 0. 52. 1.1	7. 58. 30.89	31.28	+ 0.39	67. 26. 48.05	49.00	+ 0.95
	29. 1. 46. 42.2	10. 16. 8.74	8.99	+ 0.25	79. 16. 33.33	38.90	+ 5.57
Aug.	7. 1. 48. 3.0	10. 52. 59.16	59.00	— 0.16	84. 34. 46.75	52.30	+ 5.55
	13. 1. 40. 56.0	11. 9. 29.94	29.80	— 0.14	87. 29. 39.15	44.50	+ 5.35
Sept.	15. 22. 52. 17.5	10. 34. 26.50	26.13	— 0.37	81. 9. 21.37	14.50	— 6.87
Oct.	1. 23. 8. 28.5	11. 53. 44.98	45.25	+ 0.27	87. 14. 39.77	39.50	— 0.27
Nov.	27. 1. 15. 42.9	17. 41. 37.82	37.66	— 0.16	115. 50. 8.52	9.20	+ 0.68

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS.

Jan.	6. 1. 48. 10.4	20. 49. 23.32	23.01	— 0.31	109. 28. 54.07	52.40	— 1.67
	7. 1. 49. 18.9	20. 54. 28.57	28.39	— 0.18	109. 8. 54.74	53.80	— 0.94
	26. 2. 6. 49.3	22. 26. 56.40	56.41	+ 0.01	101. 21. 5.54	4.70	— 0.84
	29. 2. 8. 54.8	22. 40. 51.88	51.85	— 0.03	99. 55. 16.31	12.90	— 3.41
Feb.	6. 2. 13. 46.1	23. 17. 16.48	16.80	+ 0.32	95. 56. 7.99	5.90	— 2.09
	11. 2. 16. 23.5	23. 39. 37.10	37.12	+ 0.02	93. 21. 26.65	22.30	— 4.35
	13. 2. 17. 22.3	23. 48. 29.12	29.21	+ 0.09	92. 18. 49.90	46.60	— 3.30
	20. 2. 20. 36.1	0. 19. 19.34	19.36	+ 0.02	88. 38. 23.11	18.60	— 4.51

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS—*continued.*

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of the CENTER of VENUS—continued.													
Mean Solar Time of Observation.				R. A. from Observation.		Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.		Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.		
1852.	d	h	m	s	h	m	s	s	°	'	"	"	
March	4.	2.	26.	21.3	1.	16.	20.67	20.49	81.	54.	54.36	50.50	— 3.86
	5.	2.	26.	48.1	1.	20.	44.15	44.57	81.	24.	47.63	43.40	— 4.23
	6.	2.	27.	16.4	1.	25.	9.01	8.95	80.	54.	50.11	47.70	— 2.41
	9.	2.	28.	41.2	1.	38.	23.69	24.20	79.	26.	21.93	16.00	— 5.93
	10.	2.	29.	10.7	1.	42.	49.87	50.10	78.	57.	16.60	12.90	— 3.70
	13.	2.	30.	41.3	1.	56.	10.36	10.66	77.	31.	39.68	35.80	— 3.88
	19.	2.	33.	57.3	2.	23.	6.25	6.63	74.	48.	22.09	17.20	— 4.89
	20.	2.	34.	32.2	2.	27.	37.75	38.09	74.	22.	16.48	13.80	— 2.68
April	1.	2.	42.	20.0	3.	22.	45.43	45.94	69.	40.	62.00	59.20	— 2.80
	2.	2.	43.	3.1	3.	27.	25.21	25.58	69.	20.	31.03	30.00	— 1.03
	3.	2.	43.	46.3	3.	32.	5.09	5.77	69.	0.	32.47	30.80	— 1.67
	8.	2.	47.	31.5	3.	55.	33.75	34.13	67.	28.	27.25	24.10	— 3.15
	10.	2.	49.	4.5	4.	5.	0.06	0.41	66.	55.	22.47	21.70	— 0.77
	12.	2.	50.	38.5	4.	14.	27.42	27.95	66.	24.	(20.94)	34.80	(+13.86)
	13.	2.	51.	26.3	4.	19.	11.95	12.09	66.	10.	4.12	3.30	— 0.82
	14.	2.	52.	13.6	4.	23.	55.88	56.41	65.	56.	7.51	6.70	— 0.81
	15.	2.	53.	1.2	4.	28.	40.18	40.85	65.	42.	48.76	45.50	— 3.26
	16.	2.	53.	49.5	4.	33.	25.13	25.36	65.	30.	1.97	0.00	— 1.97
	20.	2.	56.	59.9	4.	52.	22.33	22.82	64.	45.	0.82	0.90	+ 0.08
	24.	3.	0.	6.2	5.	11.	15.36	15.96	64.	9.	52.10	52.20	+ 0.10
	26.	3.	1.	36.5	5.	20.	38.95	39.30	63.	55.	59.35	61.90	+ 2.55
	30.	3.	4.	25.7	5.	39.	15.66	16.06	63.	35.	47.19	50.60	+ 3.41
May	11.	3.	10.	23.1	6.	28.	35.35	35.87	63.	30.	31.84	33.10	+ 1.26
	14.	3.	11.	20.6	6.	41.	22.65	22.92	63.	41.	9.10	12.20	+ 3.10
	15.	3.	11.	33.7	6.	45.	33.32	33.80	63.	45.	46.97	49.50	+ 2.53
	24.	3.	11.	34.1	7.	21.	2.03	2.33	64.	49.	23.70	27.90	+ 4.20
July	3.	1.	46.	57.3	8.	33.	53.39	54.77	73.	13.	48.65	51.10	+ 2.45
	5.	1.	37.	8.0	8.	31.	55.55	56.57	73.	34.	45.49	45.00	— 0.49
	6.	1.	31.	58.7	8.	30.	41.94	43.11	73.	44.	35.40	36.90	+ 1.50
	7.	1.	26.	40.3	8.	29.	19.23	20.32	73.	54.	3.65	4.10	+ 0.45
	8.	1.	21.	12.7	8.	27.	47.30	48.44	74.	3.	6.06	5.80	— 0.26
	12.	0.	57.	58.9	8.	20.	15.96	17.47	74.	34.	44.50	44.60	+ 0.10
	13.	0.	51.	52.5	8.	18.	5.12	6.22	74.	41.	31.02	29.70	— 1.32
	16.	0.	32.	57.4	8.	10.	56.61	58.01	74.	58.	54.44	53.10	— 1.34
	22.	23.	47.	14.3	7.	52.	41.90	43.02	75.	22.	44.61	41.60	— 3.01
Aug.	4.	22.	30.	46.3	7.	27.	16.54	17.05	75.	13.	8.91	3.60	— 5.31
	12.	21.	56.	13.0	7.	24.	10.03	10.42	74.	46.	36.97	30.00	— 6.97
	24.	21.	22.	23.8	7.	37.	33.92	34.14	74.	8.	10.59	3.60	— 6.99
	26.	21.	18.	29.5	7.	41.	32.10	32.42	...	...	...	...	...
	30.	21.	11.	53.1	7.	50.	41.79	41.95	73.	59.	29.84	23.90	— 5.94
Sept.	1.	21.	9.	9.2	7.	55.	49.58	49.80	73.	59.	6.62	0.70	— 5.92
	2.	21.	7.	54.7	7.	58.	31.34	31.28	73.	59.	27.26	21.00	— 6.26
	13.	20.	58.	44.1	8.	32.	41.32	41.41	74.	29.	53.70	47.50	— 6.20
Oct.	11.	20.	56.	39.6	10.	21.	0.04	0.02	79.	57.	44.16	40.10	— 4.06
	12.	20.	56.	51.7	10.	25.	8.70	8.73	80.	15.	54.48	50.00	— 4.48
	17.	20.	58.	2.0	10.	46.	0.46	0.25	81.	52.	24.82	20.40	— 4.42
	19.	20.	58.	31.0	10.	54.	24.15	24.10	82.	33.	28.91	25.90	— 3.01
Nov.	2.	21.	2.	49.7	11.	53.	55.31	54.77	87.	53.	43.02	40.70	— 2.32
	3.	21.	3.	10.7	11.	58.	12.88	12.75	88.	18.	20.48	18.50	— 1.98
	5.	21.	3.	54.9	12.	6.	50.37	49.98	89.	8.	5.88	4.90	— 0.98
	26.	21.	13.	46.2	13.	39.	30.98	30.40	98.	8.	36.73	35.30	— 1.43
	28.	21.	14.	58.8	13.	48.	36.81	36.44	98.	59.	25.33	23.20	— 2.13
	29.	21.	15.	36.7	13.	53.	11.38	10.84	99.	24.	36.73	35.40	— 1.33
	30.	21.	16.	14.9	13.	57.	46.28	46.19	99.	49.	40.51	38.60	— 1.91
	Dec.	2.	21.	17.	35.6	14.	6.	60.28	59.83	100.	39.	16.94	15.30	— 1.64
8.		21.	22.	1.4	14.	35.	6.21	5.66	103.	3.	9.26	8.00	— 1.26

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Dec. 13. 21. 26. 13.5	14. 59. 1.77	0.92	— 0.85	104. 55. 45.73	42.70	— 3.03
15. 21. 28. 2.0	15. 8. 43.65	43.12	— 0.53	105. 38. 29.08	28.00	— 1.08
20. 21. 32. 54.7	15. 33. 19.98	19.38	— 0.60	107. 18. 47.05	43.70	— 3.35
27. 21. 40. 34.4	16. 8. 36.87	36.25	— 0.62	109. 20. 44.13	43.10	— 1.03
30. 21. 44. 8.8	16. 24. 1.52	0.90	— 0.62	110. 5. 33.51	31.40	— 2.11

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

Jan.	5. 13. 58. 32.4	8. 57. 47.85	46.79	— 1.06	68. 34. 63.68	42.10	— 21.58
	7. 13. 48. 18.9	8. 55. 26.62	25.46	— 1.16	68. 20. 73.13	52.10	— 21.03
	9. 13. 37. 55.2	8. 52. 54.36	52.88	— 1.48	68. 6. 64.39	42.00	— 22.39
	20. 12. 38. 5.8	8. 36. 17.33	15.96	— 1.37	66. 48. 37.29	18.50	— 18.79
	22. 12. 26. 54.9	8. 32. 57.69	56.38	— 1.31	66. 35. 19.88	0.70	— 19.18
	23. 12. 21. 18.8	8. 31. 17.19	15.81	— 1.38	66. 28. 55.62	34.80	— 20.82
	28. 11. 53. 18.4	8. 22. 54.93	53.52	— 1.41	65. 59. 24.90	6.00	— 18.90
	29. 11. 47. 43.8	8. 21. 15.98	14.61	— 1.37	65. 53. 66.16	48.60	— 17.56
	30. 11. 42. 10.3	8. 19. 38.16	36.67	— 1.49	65. 48. 62.03	44.50	— 17.53
Feb.	3. 11. 20. 9.3	8. 13. 19.72	18.31	— 1.41	65. 30. 63.44	47.50	— 15.94
	6. 11. 3. 57.0	8. 8. 54.50	53.20	— 1.30	65. 19. 67.14	52.00	— 15.14
	9. 10. 48. 5.4	8. 4. 49.93	48.47	— 1.46	65. 11. 23.53	8.90	— 14.63
	10. 10. 42. 53.2	8. 3. 33.42	32.01	— 1.41	65. 8. 58.34	43.70	— 14.64
	11. 10. 37. 44.0	8. 2. 19.95	18.29	— 1.66	65. 6. 46.86	32.80	— 14.06
	14. 10. 22. 32.8	7. 58. 56.03	54.55	— 1.48	65. 1. 37.64	24.80	— 12.84
	18. 10. 3. 1.6	7. 55. 7.83	6.53	— 1.30	64. 57. 55.55	42.20	— 13.35
	20. 9. 53. 36.0	7. 53. 33.79	32.30	— 1.49	64. 57. 16.98	6.50	— 10.48
	26. 9. 26. 40.1	7. 50. 12.78	11.42	— 1.36	64. 59. 62.63	53.20	— 9.43
	28. 9. 18. 8.7	7. 49. 33.01	31.75	— 1.26	65. 2. 21.32	11.60	— 9.72
Mar.	2. 9. 5. 46.9	7. 48. 58.30	57.24	— 1.06	65. 6. 58.72	49.10	— 9.62
	3. 9. 1. 45.4	7. 48. 53.68	52.26	— 1.42	65. 8. 48.98	39.10	— 9.88
	4. 8. 57. 47.4	7. 48. 51.62	50.46	— 1.16	65. 10. 46.11	37.50	— 8.61
	5. 8. 53. 53.2	7. 48. 52.95	51.81	— 1.14	65. 12. 53.76	44.10	— 9.66
	6. 8. 50. 1.9	7. 48. 57.56	56.26	— 1.30	65. 14. 66.59	58.70	— 7.89
	8. 8. 42. 28.9	7. 49. 15.49	14.26	— 1.23	65. 19. 58.71	51.10	— 7.61
	9. 8. 38. 45.1	7. 49. 28.56	27.71	(— 0.85)	65. 22. 36.86	28.50	— 8.36
	11. 8. 31. 29.3	7. 50. 4.65	3.30	— 1.35	....	....	....
	12. 8. 27. 55.1	7. 50. 26.41	25.34	— 1.07	65. 31. 11.85	4.20	— 7.65
	17. 8. 10. 45.8	7. 52. 57.11	56.05	— 1.06	65. 47. 48.23	41.30	— 6.93
	18. 8. 7. 27.8	7. 53. 35.12	33.96	— 1.16	65. 51. 25.83	20.50	— 5.33
	20. 8. 0. 58.8	7. 54. 58.09	57.16	— 0.93	65. 58. 64.26	58.10	— 6.16
	22. 7. 54. 39.5	7. 56. 30.91	29.85	— 1.06	66. 7. 7.79	1.10	— 6.69
	23. 7. 51. 33.2	7. 57. 20.60	19.62	— 0.98	66. 11. 19.29	12.00	— 7.29
	25. 7. 45. 27.1	7. 59. 6.62	5.76	— 0.86	66. 19. 58.44	52.50	— 5.94
	27. 7. 39. 29.5	8. 1. 1.12	0.35	— 0.77	66. 28. 62.78	57.70	— 5.08
April	1. 7. 25. 9.7	8. 6. 21.79	20.84	— 0.95	....	....	....
	3. 7. 19. 38.2	8. 8. 42.50	41.58	— 0.92	67. 3. 62.28	58.20	— 4.08
	5. 7. 14. 13.3	8. 11. 9.73	8.91	— 0.82	67. 14. 57.75	53.10	— 4.65
	7. 7. 8. 54.7	8. 13. 43.40	42.50	— 0.90	67. 26. 17.51	12.40	— 5.11
	8. 7. 6. 17.3	8. 16. 2.15	1.53	— 0.62	67. 32. 5.32	1.30	— 4.02
	12. 6. 56. 3.1	8. 20. 32.43	31.77	— 0.66	67. 56. 22.57	18.60	— 3.97
	13. 6. 53. 33.0	8. 21. 58.44	57.68	— 0.76	68. 2. 43.08	38.40	— 4.68
	14. 6. 51. 4.0	8. 23. 25.67	24.88	— 0.79	68. 9. 8.22	4.50	— 3.72
	15. 6. 48. 36.4	8. 24. 54.19	53.32	— 0.87	68. 15. 43.25	36.80	— 6.45
	20. 6. 36. 35.3	8. 32. 33.90	33.15	— 0.75	68. 49. 56.32	53.30	— 3.02
	26. 6. 22. 44.9	8. 42. 20.56	19.65	— 0.91	69. 34. 34.06	31.30	— 2.76

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FLORA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Jan. 9. 17. 31. 0.2	12. 46. 37.70	....	....	88. 46. 38.22	....	....
Mar. 2. 14. 5. 47.5	12. 49. 48.66	....	....	85. 49. 51.52	....	....
4. 13. 56. 32.7	12. 48. 25.47	....	....	85. 35. 10.37	....	....
5. 13. 51. 53.5	12. 47. 42.08	....	....	85. 27. 33.61	....	....
6. 13. 47. 12.6	12. 46. 56.90	....	....	85. 19. 58.66	....	....
19. 12. 44. 47.0	12. 35. 36.25	26.47	— 9.78	83. 39. 75.90	18.60	—57.30
20. 12. 39. 53.6	12. 34. 38.62	28.71	— 9.91	83. 31. 110.24	50.90	—59.34
22. 12. 30. 5.6	12. 32. 42.10	32.03	—10.07	83. 17. 71.27	9.60	—61.67
23. 12. 25. 10.9	12. 31. 43.19	33.26	— 9.93	83. 9. 114.69	57.10	—57.59
April 1. 11. 40. 59.8	12. 22. 53.80	44.18	— 9.62	82. 10. 90.99	39.80	—51.19
2. 11. 36. 6.6	12. 21. 56.29	46.72	— 9.57	82. 4. 105.23	49.80	—55.43
3. 11. 31. 14.1	12. 20. 59.60	49.75	— 9.85	81. 59. 62.56	10.20	—52.36
8. 11. 7. 0.0	12. 16. 24.29	14.71	— 9.58	81. 33. 87.63	37.40	—50.23
12. 10. 47. 52.2	12. 12. 59.53	....	....	81. 17. 37.83	....	....
13. 10. 43. 7.5	12. 12. 10.61	....	....	81. 13. 55.19	....	....
14. 10. 38. 24.5	12. 11. 23.38	....	....	81. 10. 28.11	....	....
20. 10. 10. 30.6	12. 7. 4.20	....	....	80. 54. 7.23	....	....
24. 9. 52. 22.2	12. 4. 39.10	....	....	80. 47. 37.50	....	....
26. 9. 43. 26.8	12. 3. 35.34	....	....	80. 45. 46.61	....	....

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of MELPOMENE.

June 26. 11. 49. 57.6	18. 10. 56.83	....	....	98. 20. 54.78	....	....
July 3. 11. 15. 10.7	18. 3. 40.13	....	....	98. 44. 43.40	....	....
5. 11. 5. 17.7	18. 1. 38.61	....	....	98. 53. 3.81	....	....
6. 11. 0. 21.6	18. 0. 38.22	....	....	98. 57. 24.98	....	....
7. 10. 55. 26.9	17. 59. 39.31	....	....	99. 1. 57.05	....	....
8. 10. 50. 32.8	17. 58. 40.95	....	....	99. 6. 43.50	....	....
9. 10. 45. 39.5	17. 57. 43.37	....	....	99. 11. 33.05	....	....
14. 10. 21. 28.3	17. 53. 10.99	....	....	99. 37. 56.26	....	....
15. 10. 16. 41.1	17. 52. 19.60	....	....	99. 43. 32.46	....	....
17. 10. 7. 11.8	17. 50. 41.88	....	....	99. 55. 14.32	....	....
19. 9. 57. 48.4	17. 49. 9.98	....	....	100. 7. 25.99	....	....
21. 9. 48. 30.8	17. 47. 43.76	....	....	100. 19. 58.16	....	....
22. 9. 43. 54.8	17. 47. 3.83	....	....	100. 26. 27.85	....	....
23. 9. 39. 20.4	17. 46. 25.22	....	....	....	....	....
27. 9. 21. 20.4	17. 44. 8.53	....	....	100. 59. 56.51	....	....
29. 9. 12. 31.7	17. 43. 11.46	....	....	101. 13. 46.14	....	....
30. 9. 8. 10.3	17. 42. 45.88	....	....	101. 20. 50.85	....	....
Aug. 2. 8. 55. 16.9	17. 41. 40.03	....	....	101. 42. 24.87	....	....
4. 8. 46. 51.2	17. 41. 6.04	....	....	101. 56. 59.80	....	....
6. 8. 38. 33.7	17. 40. 40.29	....	....	102. 11. 43.04	....	....

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VICTORIA.

Jan. 5. 12. 54. 43.9	7. 53. 49.72	45.65	— 4.07	80. 7. 45.37	28.80	—16.57
9. 12. 34. 57.1	7. 49. 45.92	41.35	— 4.57	80. 4. 60.30	40.30	—20.00
Mar. 6. 8. 11. 8.3	7. 9. 57.19	....	....	77. 43. 45.96	....	....

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Sept. 21. 15. 13. 45.5	3. 18. 18.54	19.91	+ 1.37	81. 47. 51.51	56.90	+ 5.39
Oct. 5. 14. 13. 52.2	3. 13. 27.08	28.82	+ 1.74	82. 37. 27.07	31.80	+ 4.73
6. 14. 9. 22.9	3. 12. 53.66	55.32	+ 1.66	82. 41. 25.73	30.00	+ 4.27
11. 13. 46. 32.5	3. 9. 42.26	44.20	+ 1.94	83. 1. 48.07	51.00	+ 2.93
18. 13. 13. 35.2	3. 4. 15.40	17.07	+ 1.67	83. 30. 52.48	54.90	+ 2.42
19. 13. 8. 47.8	3. 3. 23.78	25.47	+ 1.69	83. 34. 56.98	62.00	+ 5.02
26. 12. 34. 50.2	2. 56. 56.42	58.06	+ 1.64	84. 2. 44.71	52.90	+ 8.19
Nov. 2. 12. 0. 22.1	2. 49. 58.63	60.36	+ 1.73	84. 27. 36.47	42.90	+ 6.43
3. 11. 55. 25.5	2. 48. 57.68	59.55	+ 1.87	84. 30. 47.72	54.90	+ 7.18
16. 10. 51. 31.1	2. 36. 8.02	9.81	+ 1.79	85. 1. 28.55	34.30	+ 5.75
18. 10. 41. 42.3	2. 34. 18.71	20.50	+ 1.79	85. 4. 3.38	10.00	+ 6.62
Dec. 8. 9. 9. 32.6	2. 20. 37.07	38.71	+ 1.64	84. 54. 7.53	13.60	+ 6.07
11. 8. 56. 33.6	2. 19. 25.64	27.35	+ 1.71	84. 47. 0.50	7.50	+ 7.00
15. 8. 39. 38.6	2. 18. 14.08	15.65	+ 1.57	84. 35. 22.07	29.70	+ 7.63
20. 8. 19. 7.5	2. 17. 22.40	23.96	+ 1.56	84. 17. 33.08	39.90	+ 6.82
28. 7. 47. 43.5	2. 17. 25.64	27.11	+ 1.47	83. 42. 11.03	19.20	+ 8.17
30. 7. 40. 8.2	2. 17. 42.27	43.86	+ 1.59	83. 32. 12.99	17.90	+ 4.91

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of METIS.

April 26. 15. 1. 59.1	17. 24. 0.05	...	...	112. 52. 44.35	...	...
May 15. 13. 36. 50.2	17. 12. 31.59	...	...	113. 17. 41.46	...	...
31. 12. 18. 19.0	16. 56. 52.43	51.23	- 1.20	113. 29. 16.89	13.20	- 3.69
June 4. 11. 58. 18.4	16. 52. 34.73	33.54	- 1.19	113. 30. 40.31	34.60	- 5.71
14. 11. 8. 24.4	16. 41. 58.08	57.09	- 0.99	113. 31. 40.31	31.90	- 8.41
23. 10. 24. 24.8	16. 33. 20.35	...	...	113. 30. 32.83	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PSYCHE.

April 5. 8. 53. 39.3	9. 50. 52.01	...	...	76. 19. 45.80	...	...
12. 8. 25. 24.8	9. 50. 8.78	...	...	76. 12. 42.07	...	...
13. 8. 21. 27.7	9. 50. 7.52	...	...	76. 12. 7.55	...	...
14. 8. 17. 32.4	9. 50. 8.14	...	...	76. 11. 33.18	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FORTUNA.

Aug. 29. 11. 43. 0.9	22. 16. 18.56	...	...	98. 11. 0.00	...	...
30. 11. 38. 12.5	22. 15. 25.95	...	...	98. 16. 38.44	...	...
31. 11. 33. 23.9	22. 14. 33.05	...	...	98. 22. 15.48	...	...
Sept. 1. 11. 28. 36.0	22. 13. 41.00	...	...	98. 27. 54.64	...	...
2. 11. 23. 48.3	22. 12. 49.06	...	...	98. 33. 31.25	...	...
3. 11. 19. 1.2	22. 11. 57.73	...	...	98. 39. 7.69	...	...
8. 10. 55. 15.1	22. 7. 50.51	...	...	99. 6. 24.42	...	...
17. 10. 13. 32.8	22. 1. 30.36	...	...	99. 50. 49.81	...	...
18. 10. 9. 1.5	22. 0. 54.83	...	...	99. 55. 14.91	...	...
Oct. 11. 8. 33. 11.6	21. 55. 29.91	...	...	100. 53. 33.15	...	...
12. 8. 29. 24.2	21. 55. 38.38	...	...	100. 54. 41.86	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of MASSILIA.						
Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Oct. 5. 10. 58. 27.2	23. 57. 30.03	...	...	89. 46. 45.52	...	...
11. 10. 30. 5.3	23. 52. 42.80	...	...	90. 21. 29.32	...	...
12. 10. 25. 23.4	23. 51. 56.66	...	...	90. 26. 52.67	...	...
Dec. 8. 6. 41. 10.1	23. 51. 50.17	...	...	90. 49. 28.17	...	...
20. 6. 4. 30.6	0. 2. 23.35	...	...	89. 44. 7.15	...	...
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of EGERIA.						
March 2. 13. 23. 58.9	12. 7. 53.23	2.70	— 50.53	65. 42. 39.720	58.40	— 338.80
3. 13. 19. 3.6	12. 6. 53.61	2.98	— 50.63	65. 39. 35.908	21.80	— 337.28
4. 13. 14. 7.0	12. 5. 52.79	2.31	— 50.48	65. 35. 39.743	57.50	— 339.93
5. 13. 9. 9.9	12. 4. 51.43	0.74	— 50.69	65. 32. 38.233	46.00	— 336.33
19. 11. 58. 56.9	11. 48. 98.66	50.23	— 48.43	65. 14. 33.091	14.90	— 316.01
20. 11. 53. 57.0	11. 47. 94.51	45.13	— 49.38	65. 15. 31.367	0.40	— 313.27
23. 11. 38. 56.5	11. 44. 81.19	32.67	— 48.52	65. 19. 30.744	1.50	— 305.94
April 2. 10. 49. 49.8	11. 35. 31.94	...	...	65. 56. 10.74	...	...
3. 10. 45. 1.9	11. 34. 39.76	...	...	66. 0. 54.12	...	...
8. 10. 21. 20.6	11. 30. 37.40	...	...	66. 28. 28.15	...	...
12. 10. 2. 51.0	11. 27. 50.96	...	...	66. 54. 49.27	...	...
13. 9. 58. 17.6	11. 27. 13.37	...	...	67. 2. 1.16	...	...
14. 9. 53. 46.0	11. 26. 37.52	...	...	67. 9. 24.34	...	...
16. 9. 44. 48.1	11. 25. 31.28	...	...	67. 24. 39.84	...	...
20. 9. 27. 11.9	11. 23. 38.36	...	...	67. 57. 42.72	...	...
24. 9. 10. 4.4	11. 22. 14.35	...	...	68. 33. 36.61	...	...
26. 9. 1. 41.0	11. 21. 42.63	...	...	68. 52. 17.66	...	...
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRENE.						
Sept. 1. 12. 33. 38.9	23. 18. 54.56	60.18	+ 5.62	108. 48. 72.11	39.65	— 32.46
3. 12. 24. 4.4	23. 17. 11.60	17.09	+ 5.49	109. 0. 93.88	50.73	— 43.15
11. 11. 45. 40.5	23. 10. 13.81	18.65	+ 4.84	109. 44. 70.25	34.91	— 35.34
17. 11. 16. 57.3	23. 5. 5.16	10.70	+ 5.54	110. 10. 84.44	58.16	— 26.28
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of EUNOMIA.						
Dec. 28. 10. 1. 0.4	4. 31. 4.50	...	...	57. 34. 14.29	...	...
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO.						
Aug. 9. 15. 9. 54.6	0. 24. 55.22	69.97	+ 14.75	85. 55. 74.51	15.70	— 58.81
31. 13. 42. 58.1	0. 24. 28.62	46.38	+ 17.76	88. 41. 130.09	59.40	— 70.69
Sept. 1. 13. 38. 43.7	0. 24. 10.06	28.08	+ 18.02	88. 52. 104.31	33.30	— 71.01
2. 13. 34. 28.0	0. 23. 50.21	68.37	+ 18.16	89. 3. 90.96	21.30	— 69.66
3. 13. 30. 10.9	0. 23. 28.93	47.27	+ 18.34	89. 14. 94.65	22.90	— 71.75
8. 13. 8. 26.0	0. 21. 23.22	41.99	+ 18.77	90. 12. 116.28	42.10	— 74.18
16. 12. 32. 39.6	0. 17. 3.37	22.85	+ 19.48	91. 54. 122.70	49.00	— 73.70
17. 12. 28. 7.3	0. 16. 26.92	46.49	+ 19.57	92. 8. 78.73	6.40	— 72.33
20. 12. 14. 27.0	0. 14. 33.95	53.64	+ 19.69	92. 48. 95.41	21.60	— 73.81
21. 12. 9. 52.6	0. 13. 55.39	74.98	+ 19.59	93. 1. 123.02	51.60	— 71.42
24. 11. 56. 6.9	0. 11. 57.12	76.93	+ 19.81	93. 42. 94.10	23.90	— 70.20

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO—*concluded.*

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Oct. 5. 11. 5. 40'4	0. 4. 44'39	64'25	+19'86	96. 6. 74'80	9'90	—64'90
12. 10. 34. 6'5	0. 0. 41'22	60'79	+19'57	97. 27. 103'81	45'90	—57'91
19. 10. 3. 25'4	23. 57. 30'91	50'19	+19'28	98. 37. 54'88	3'00	—51'88
23. 9. 46. 24'9	23. 56. 13'79	32'30	+18'51	99. 10. 56'14	6'80	—49'34
Nov. 3. 9. 1. 53'1	23. 54. 56'82	74'23	+17'41	100. 14. 73'21	33'60	—39'61
27. 7. 37. 4'4	0. 4. 31'52	46'47	+14'95	100. 24. 70'42	44'50	—25'92
Dec. 8. 7. 3. 23'0	0. 14. 6'76	20'60	+13'84	99. 39. 42'60	17'90	—24'70
15. 6. 43. 22'2	0. 21. 38'54	51'64	+13'10	98. 57. 52'08	29'90	—22'18
17. 6. 37. 49'9	0. 23. 58'50	71'57	+13'07	98. 43. 79'76	56'90	—22'86
20. 6. 29. 40'3	0. 27. 37'20	50'04	+12'84	98. 22. 48'61	24'00	—24'61

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of THALIA.

Dec. 20. 9. 10. 37'6	3. 9. 0'96	72. 51. 16'49
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

Jan. 23. 7. 0. 26'0	3. 9. 31'71	30'23	— 1'48	113. 14. 43'92	33'50	—10'42
30. 6. 38. 13'8	3. 14. 51'72	50'43	— 1'29	111. 39. 70'99	59'90	—11'09
Feb. 3. 6. 26. 3'6	3. 18. 25'71	24'36	— 1'35	110. 44. 30'54	21'20	— 9'34

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES.

Jan. 5. 11. 36. 31'6	6. 35. 24'58	40'94	+16'36	61. 1. 34'68	32'20	— 2'48
7. 11. 26. 35'8	6. 33. 20'35	36'86	+16'51	60. 52. 46'37	42'50	— 3'87
9. 11. 16. 42'5	6. 31. 18'53	34'67	+16'14	60. 44. 22'88	17'80	— 5'08
23. 10. 9. 10'2	6. 18. 46'90	62'54	+15'64	59. 57. 48'49	37'50	—10'99
28. 9. 46. 7'1	6. 15. 24'25	39'50	+15'25	59. 45. 69'07	56'30	—12'77
30. 9. 37. 8'3	6. 14. 15'63	30'41	+14'78	59. 41. 67'41	55'00	—12'41
Feb. 3. 9. 19. 29'2	6. 12. 19'80	34'33	+14'53	59. 34. 66'87	53'70	—13'17
6. 9. 6. 34'5	6. 11. 12'69	27'20	+14'51	59. 30. 40'91	27'10	—13'81
12. 8. 41. 38'3	6. 9. 51'68	65'44	+13'76	59. 23. 39'33	26'20	—13'13
18. 8. 17. 52'6	6. 9. 41'39	54'46	+13'07	59. 18. 48'49	34'20	—14'29
25. 7. 51. 37'0	6. 10. 57'43	69'95	+12'52	59. 15. 21'25	8'30	—12'95
Mar. 2. 7. 30. 18'9	6. 13. 15'08	26'93	+11'85	59. 13. 64'12	50'40	—13'72
4. 7. 23. 26'5	6. 14. 14'73	26'58	+11'85	59. 13. 56'72	43'20	—13'52
5. 7. 20. 3'2	6. 14. 47'42	58'93	+11'51	59. 13. 56'16	45'00	—13'16
6. 7. 16. 41'1	6. 15. 21'33	32'94	+11'61	59. 13. 59'57	45'20	—14'37
9. 7. 6. 45'0	6. 17. 13'20	24'64	+11'44	59. 14. 15'71	5'30	—10'41

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CALLIOPE.

Nov. 19. 13. 14. 14'0	5. 11. 4'06	3'05	— 1'01	65. 16. 63'04	57'81	— 5'23
26. 12. 40. 6'7	5. 4. 27'12	26'94	— 0'18	64. 44. 57'16	48'70	— 8'46
27. 12. 35. 11'0	5. 3. 27'09	26'62	— 0'47	64. 40. 26'13	23'67	— 2'46
Dec. 11. 11. 25. 25'3	4. 48. 41'96	40'07	— 1'89	63. 44. 62'87	47'29	—15'58
14. 11. 10. 29'2	4. 45. 32'91	32'31	— 0'60	63. 34. 40'00	34'44	— 5'56
15. 11. 5. 32'1	4. 44. 31'53	30'90	— 0'63	63. 31. 22'51	18'15	— 4'36
20. 10. 40. 58'5	4. 39. 36'67	36'09	— 0'58	63. 15. 60'22	54'48	— 5'74
30. 9. 53. 18'1	4. 31. 14'05	13'33	— 0'72	62. 49. 20'77	14'09	— 6'68

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HYGEIA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Nov. 18. 12. 39. 40.5	4. 31. 88.38	56.00	-32.38	64. 33. 34.99	77.84	+42.85
19. 12. 34. 55.4	4. 31. 39.00	6.43	-32.57	64. 35. 36.97	80.54	+43.57
27. 11. 56. 40.0	4. 24. 49.79	17.70	-32.09	64. 53. 55.94	103.96	+48.02
Dec. 11. 10. 49. 49.6	4. 12. 60.23	28.67	-31.56	65. 32. 30.96	84.77	+53.81
14. 10. 35. 41.2	4. 10. 39.17	8.30	-30.87	65. 41. 19.11	75.04	+55.93
21. 10. 3. 10.9	4. 5. 39.41	9.41	-30.00	66. 1. 49.93	107.54	+57.61
30. 9. 22. 37.5	3. 59. 88.41	58.92	-29.49	66. 26. 48.37	100.97	+52.60
31. 9. 18. 12.0	3. 59. 58.72	30.28	-28.44	66. 29. 20.39	76.20	+55.81

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

Jan. 5. 20. 1. 39.6	15. 1. 55.55	54.41	- 1.14	106. 6. 4.97	3.50	- 1.47
7. 19. 55. 3.8	15. 3. 11.80	11.06	- 0.74	106. 11. 13.33	11.30	- 2.03
8. 19. 51. 45.6	15. 3. 49.66	48.78	- 0.88	106. 13. 43.78	41.70	- 2.08
9. 19. 48. 26.8	15. 4. 26.89	26.08	- 0.81	106. 16. 11.12	9.80	- 1.32
20. 19. 11. 31.5	15. 10. 47.57	46.64	- 0.93	106. 40. 38.77	40.50	+ 1.73
23. 19. 1. 17.2	15. 12. 21.25	20.09	- 1.16	106. 46. 31.48	29.50	- 1.98
28. 18. 44. 2.0	15. 14. 46.08	45.01	- 1.07	106. 55. 20.26	20.10	- 0.16
Feb. 6. 18. 12. 22.5	15. 18. 30.37	29.33	- 1.04	107. 8. 30.59	31.50	+ 0.91
9. 18. 1. 38.1	15. 19. 33.96	32.99	- 0.97	107. 12. 7.52	7.80	+ 0.28
10. 17. 58. 2.2	15. 19. 53.85	52.91	- 0.94	107. 13. 13.68	14.50	+ 0.82
11. 17. 54. 25.6	15. 20. 13.20	12.17	- 1.03	107. 14. 19.60	18.60	- 1.00
18. 17. 28. 49.7	15. 22. 9.04	7.99	- 1.05	107. 20. 30.30	30.70	+ 0.40
19. 17. 25. 7.6	15. 22. 22.91	21.73	- 1.18	107. 21. 14.87	12.90	- 1.97
29. 16. 47. 25.5	15. 23. 60.12	59.19	- 0.93	107. 25. 43.16	42.70	- 0.46
Mar. 3. 16. 35. 52.6	15. 24. 15.00	13.97	- 1.03	107. 26. 10.51	9.60	- 0.91
4. 16. 32. 0.1	15. 24. 18.37	17.40	- 0.97	107. 26. 14.29	13.10	- 1.19
5. 16. 28. 6.7	15. 24. 20.96	20.06	- 0.90	107. 26. 14.45	13.80	- 0.65
18. 15. 36. 25.9	15. 23. 46.77	45.65	- 1.12	107. 22. 15.70	13.80	- 1.90
21. 15. 24. 12.3	15. 23. 20.90	19.58	- 1.32	107. 20. 13.82	13.30	- 0.52
22. 15. 20. 6.0	15. 23. 10.46	9.42	- 1.04	107. 19. 30.61	27.80	- 2.81
23. 15. 15. 59.4	15. 22. 59.73	58.53	- 1.20	107. 18. 40.61	39.80	- 0.81
April 1. 14. 38. 27.1	15. 20. 50.23	49.11	- 1.12	107. 9. 33.66	34.40	+ 0.74
2. 14. 34. 13.6	15. 20. 32.55	31.40	- 1.15	107. 8. 21.07	21.70	+ 0.63
8. 14. 8. 39.3	15. 18. 33.38	32.29	- 1.09	107. 0. 17.56	18.70	+ 1.14
10. 14. 0. 3.3	15. 17. 49.11	47.95	- 1.16	106. 57. 20.65	20.70	+ 0.05
13. 13. 47. 5.3	15. 16. 38.60	37.46	- 1.14	106. 52. 41.17	38.80	- 2.37
16. 13. 34. 2.9	15. 15. 23.71	22.56	- 1.15	106. 47. 40.42	40.30	- 0.12
19. 13. 20. 56.3	15. 14. 4.65	3.69	- 0.96	106. 42. 27.04	26.60	- 0.44
20. 13. 16. 33.6	15. 13. 37.83	36.60	- 1.23	106. 40. 41.39	39.00	- 2.39
21. 13. 12. 10.2	15. 13. 10.19	9.15	- 1.04	106. 38. 49.69	50.00	+ 0.31
22. 13. 7. 46.6	15. 12. 42.45	41.36	- 1.09	106. 36. 61.50	59.60	- 1.90
24. 12. 58. 58.5	15. 11. 46.01	44.81	- 1.20	106. 33. 15.25	15.20	- 0.05
27. 12. 45. 44.2	15. 10. 19.21	17.90	- 1.31	106. 27. 32.08	30.30	- 1.78
May 1. 12. 28. 2.0	15. 8. 20.27	19.00	- 1.27	106. 19. 38.39	38.50	+ 0.11
3. 12. 19. 9.9	15. 7. 19.84	18.59	- 1.25	106. 15. 38.55	38.80	+ 0.25
4. 12. 14. 43.6	15. 6. 49.40	48.23	- 1.17	106. 13. 37.81	38.30	+ 0.49
8. 11. 56. 56.4	15. 4. 47.16	46.13	- 1.03	106. 5. 33.90	33.40	- 0.50
10. 11. 48. 5.3	15. 3. 46.05	44.99	- 1.06	106. 1. 31.54	30.50	- 1.04
14. 11. 30. 20.2	15. 1. 44.24	43.34	- 0.90	105. 53. 28.43	27.30	- 1.13
15. 11. 25. 54.5	15. 1. 14.35	13.18	- 1.17	105. 51. 27.74	27.50	- 0.24
31. 10. 15. 32.2	14. 53. 45.44	44.33	- 1.11	105. 21. 55.45	54.80	- 0.65
June 1. 10. 11. 11.8	14. 53. 20.86	19.31	(- 1.55)	105. 20. 17.97	17.20	- 0.77
2. 10. 6. 51.0	14. 52. 55.89	54.75	- 1.14	105. 18. 42.36	41.70	- 0.66
4. 9. 58. 11.5	14. 52. 8.14	7.03	- 1.11	105. 15. 37.54	36.90	- 0.64
8. 9. 40. 58.7	14. 50. 38.74	37.61	- 1.13	105. 9. 55.50	54.20	- 1.30
16. 9. 5. 59.8	14. 48. 6.65	5.56	- 1.09	105. 0. 30.33	29.20	- 1.13

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER—concluded.

Mean Solar Time of Observation.					R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852.	d	h	m	s	h	m	s	°	'	"
June	22.	8.	41.	56.5	14. 46. 38.60	37.65	— 0.95	104. 55. 26.18	24.70	— 1.48
	23.	8.	37.	48.5	14. 46. 26.45	25.32	— 1.13	104. 54. 45.75	44.60	— 1.15
	24.	8.	33.	40.9	14. 46. 14.77	13.67	— 1.10	104. 54. 9.07	7.60	— 1.47
	26.	8.	25.	27.7	14. 45. 53.35	52.42	— 0.93	104. 53. 2.94	3.00	+ 0.06
	30.	8.	9.	10.0	14. 45. 19.22	18.23	— 0.99	104. 51. 31.71	32.10	+ 0.39

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN.

Jan.	5.	6.	47.	34.9	1. 45. 40.39	39.42	— 0.97	81. 46. 19.51	12.20	— 7.31
	6.	6.	43.	41.6	1. 45. 43.02	41.78	— 1.24	81. 45. 47.11	39.90	— 7.21
	7.	6.	39.	48.2	1. 45. 45.56	44.55	— 1.01	81. 45. 13.30	5.20	— 8.10
	9.	6.	32.	3.2	1. 45. 52.41	51.35	— 1.06	81. 43. 56.04	48.80	— 7.24
	10.	6.	28.	11.1	1. 45. 56.28	55.37	— 0.91	81. 43. 13.77	7.10	— 6.67
	19.	5.	53.	42.6	1. 46. 51.08	50.08	— 1.00	81. 35. 15.46	9.20	— 6.26
	22.	5.	42.	20.6	1. 47. 16.85	15.61	— 1.24	81. 31. 56.69	49.90	— 6.79
	23.	5.	38.	33.9	1. 47. 26.10	24.92	— 1.18	81. 30. 46.13	39.20	— 6.93
	29.	5.	16.	2.2	1. 48. 30.08	28.96	— 1.12	81. 22. 58.53	51.10	— 7.43
Feb.	6.	4.	46.	20.5	1. 50. 15.98	15.19	— 0.79	81. 10. 42.87	38.10	— 4.77
Sept.	1.	16.	18.	51.7	3. 4. 44.34	44.15	— 0.19	75. 10. 30.67	20.40	— 10.27
	8.	15.	51.	3.5	3. 4. 27.50	26.94	— 0.56	75. 13. 16.21	7.00	— 9.21
	21.	14.	58.	31.3	3. 3. 1.78	1.08	— 0.70	75. 21. 56.11	47.20	— 8.91
Oct.	5.	14.	0.	45.4	3. 0. 18.14	17.60	— 0.54	75. 35. 45.80	36.10	— 9.70
	6.	13.	56.	35.0	3. 0. 3.63	3.45	— 0.18	75. 36. 54.34	44.40	— 9.94
	11.	13.	35.	41.0	2. 58. 48.97	48.38	— 0.59	75. 42. 52.28	41.20	— 11.08
	18.	13.	6.	14.4	2. 56. 53.42	52.69	— 0.73	75. 51. 45.90	37.00	— 8.90
	19.	13.	2.	1.1	2. 56. 35.94	35.32	— 0.62	75. 52. 65.69	56.20	— 9.49
	25.	12.	36.	38.0	2. 54. 48.04	47.53	— 0.51	76. 1. 11.60	2.40	— 9.20
	26.	12.	32.	24.0	2. 54. 29.88	29.07	— 0.81	76. 2. 34.26	24.80	— 9.46
Nov.	2.	12.	2.	41.0	2. 52. 17.83	17.17	— 0.66	76. 12. 16.34	6.10	— 10.24
	3.	11.	58.	26.0	2. 51. 58.75	58.06	— 0.69	76. 13. 37.90	29.30	— 8.60
	18.	10.	54.	43.5	2. 47. 14.10	13.47	— 0.63	76. 33. 48.65	39.30	— 9.35
	19.	10.	50.	29.7	2. 46. 56.17	55.13	— 1.04	76. 34. 65.07	55.10	— 9.97
	27.	10.	16.	41.5	2. 44. 34.88	34.30	— 0.58	76. 44. 35.02	26.30	— 8.72
Dec.	8.	9.	30.	36.8	2. 41. 44.76	44.00	— 0.76	76. 55. 30.28	20.60	— 9.68
	11.	9.	18.	8.9	2. 41. 4.43	3.57	— 0.86	76. 57. 56.57	47.00	— 9.57
	15.	9.	1.	35.9	2. 40. 14.91	14.31	— 0.60	77. 0. 46.72	37.80	— 8.92
	21.	8.	36.	57.2	2. 39. 11.60	11.22	— 0.38	77. 3. 68.11	58.00	— 10.11
	28.	8.	8.	30.3	2. 38. 15.87	15.20	— 0.67	77. 6. 29.36	22.20	— 7.16
	30.	8.	0.	26.3	2. 38. 3.71	2.85	— 0.86	77. 6. 54.27	45.10	— 9.17
	31.	7.	56.	24.7	2. 37. 57.94	57.30	— 0.64	77. 6. 61.42	53.50	— 7.92

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of URANUS.

Jan.	5.	6.	55.	49.4	1. 53. 56.29	67.20	+ 10.91	78. 49. 110.93	53.00	— 57.93
	6.	6.	51.	52.9	1. 53. 55.68	66.58	+ 10.90	78. 49. 112.32	54.30	— 58.02
	7.	6.	47.	56.5	1. 53. 55.19	66.16	+ 10.97	78. 49. 113.09	54.50	— 58.59
	9.	6.	40.	4.5	1. 53. 55.06	65.90	+ 10.84	78. 49. 108.34	51.70	— 56.64
	10.	6.	36.	8.9	1. 53. 55.30	66.07	+ 10.77	78. 49. 104.55	48.70	— 55.85
	19.	5.	0.	56.0	1. 54. 5.69	16.54	+ 10.85	78. 48. 88.49	32.00	— 56.49
	23.	5.	45.	22.3	1. 54. 15.65	26.38	+ 10.73	78. 47. 86.57	29.50	— 57.07
Aug.	29.	15.	50.	31.4	2. 24. 29.71	41.52	+ 11.81	76. 8. 95.66	39.60	— 56.06
Sept.	1.	15.	38.	33.2	2. 24. 19.22	31.42	+ 12.20	76. 9. 87.58	32.40	— 55.18
	2.	15.	34.	33.7	2. 24. 15.63	27.69	+ 12.06	76. 9. 107.71	51.70	— 56.01

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of the CENTER of URANUS—*concluded.*

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1852. d h m s	h m s	s	s	° ' "	"	"
Sept. 8. 15. 10. 32.5	2. 23. 49.83	61.67	+11.84	76. 12. 62.25	5.50	—56.75
16. 14. 38. 21.2	2. 23. 5.61	17.69	+12.08	76. 15. 106.94	49.40	—57.54
21. 14. 18. 9.3	2. 22. 33.13	45.25	+12.12	76. 18. 89.86	33.70	—56.16
29. 13. 45. 43.2	2. 21. 34.18	46.46	+12.28	76. 23. 88.28	30.60	—57.68
Oct. 5. 13. 21. 19.1	2. 20. 45.35	57.55	+12.20	76. 27. 95.15	37.10	—58.05
6. 13. 17. 14.3	2. 20. 36.49	49.06	+12.57	76. 28. 78.78	19.90	—58.88
11. 12. 56. 51.5	2. 19. 53.08	65.27	+12.19	76. 32. 59.53	0.40	—59.13
18. 12. 28. 16.2	2. 18. 48.93	61.09	+12.16	76. 37. 80.73	23.50	—57.23
19. 12. 24. 11.0	2. 18. 39.61	51.72	+12.11	76. 38. 70.02	10.70	—59.32
20. 12. 20. 5.4	2. 18. 29.96	42.31	+12.35	76. 38. 117.77	58.00	—59.77
25. 11. 59. 38.8	2. 17. 42.74	54.81	+12.07	76. 42. 115.43	57.10	—58.33
28. 11. 47. 22.3	2. 17. 13.91	26.10	+12.19	76. 45. 79.94	21.50	—58.44
Nov. 2. 11. 26. 55.2	2. 16. 26.19	38.24	+12.05	76. 49. 82.25	22.20	—60.05
3. 11. 22. 49.7	2. 16. 16.60	28.70	+12.10	76. 50. 68.64	10.20	—58.44
16. 10. 29. 43.0	2. 14. 16.34	28.17	+11.83	77. 0. 76.87	16.10	—60.77
18. 10. 21. 33.4	2. 13. 58.53	70.53	+12.00	77. 1. 103.68	44.50	—59.18
27. 9. 44. 55.6	2. 12. 43.72	55.73	+12.01	77. 7. 118.71	58.90	—59.81
Dec. 8. 9. 0. 22.3	2. 11. 25.23	37.09	+11.86	77. 14. 89.61	29.90	—59.71
11. 8. 48. 16.3	2. 11. 6.98	18.62	+11.64	77. 16. 59.85	1.00	—58.85
15. 8. 32. 10.3	2. 10. 44.50	56.21	+11.71	77. 17. 109.97	50.80	—59.17
20. 8. 12. 6.6	2. 10. 20.31	31.97	+11.66	77. 19. 107.17	48.10	—59.07
21. 8. 8. 6.2	2. 10. 15.83	27.65	+11.82	77. 20. 67.17	8.80	—58.37
28. 7. 40. 9.8	2. 9. 50.74	62.50	+11.76	77. 22. 63.86	6.80	—57.06
30. 7. 32. 12.7	2. 9. 45.40	57.00	+11.60	77. 22. 90.03	31.70	—58.33

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of NEPTUNE.

July 31. 14. 11. 36.4	22. 50. 58.37	58.58	+ 0.21	98. 19. 16.61	12.65	— 3.96
Aug. 3. 13. 59. 33.5	22. 50. 43.18	43.19	+ 0.01	98. 20. 53.32	49.58	— 3.74
7. 13. 43. 28.9	22. 50. 22.19	22.53	+ 0.34	98. 23. 5.11	3.84	— 1.27
9. 13. 35. 26.1	22. 50. 11.20	11.68	+ 0.48	98. 24. 14.13	12.91	— 1.22
13. 13. 19. 20.5	22. 49. 49.08	49.33	+ 0.25	98. 26. 36.06	34.57	— 1.49
31. 12. 6. 46.9	22. 48. 1.55	1.80	+ 0.25	98. 37. 49.05	46.15	— 2.90
Sept. 1. 12. 2. 44.8	22. 47. 55.41	55.66	+ 0.25	98. 38. 26.12	24.07	— 2.05
2. 11. 58. 42.9	22. 47. 49.32	49.51	+ 0.19	98. 39. 5.31	1.99	— 3.32
3. 11. 54. 41.0	22. 47. 43.33	43.36	+ 0.03	98. 39. 44.53	39.90	— 4.63
8. 11. 34. 30.8	22. 47. 12.57	12.70	+ 0.13	98. 42. 52.09	48.55	— 3.54
11. 11. 22. 24.8	22. 46. 54.26	54.45	+ 0.19	98. 44. 42.08	40.38	— 1.70
17. 10. 58. 13.5	22. 46. 18.32	18.56	+ 0.24	98. 48. 19.71	18.77	— 0.94
20. 10. 46. 8.5	22. 46. 1.01	1.06	+ 0.05	98. 50. 7.15	4.49	— 2.66
21. 10. 42. 6.8	22. 45. 55.19	55.31	+ 0.12	98. 50. 40.97	39.12	— 1.85
22. 10. 38. 5.2	22. 45. 49.44	49.61	+ 0.17	98. 51. 14.22	13.44	— 0.78
29. 10. 9. 55.4	22. 45. 10.88	11.11	+ 0.23	98. 55. 9.99	3.75	— 6.24
Oct. 2. 9. 57. 52.2	22. 44. 55.38	55.50	+ 0.12	98. 56. 41.05	36.51	— 4.54
5. 9. 45. 49.5	22. 44. 40.39	40.49	+ 0.10	98. 58. 10.22	5.34	— 4.88
6. 9. 41. 48.5	22. 44. 35.30	35.63	+ 0.33	98. 58. 36.94	34.05	— 2.89
11. 9. 21. 46.2	22. 44. 12.49	12.51	+ 0.02	99. 0. 53.15	49.99	— 3.16
12. 9. 17. 46.0	22. 44. 8.17	8.14	— 0.03	99. 1. 19.93	15.63	— 4.30
18. 8. 53. 46.2	22. 43. 43.71	43.81	+ 0.10	99. 3. 39.79	37.21	— 2.58
19. 8. 49. 46.3	22. 43. 39.74	40.09	+ 0.35	99. 3. 61.90	58.68	— 3.22
23. 8. 33. 48.9	22. 43. 25.95	26.22	+ 0.27	99. 5. 18.29	18.27	— 0.02
26. 8. 21. 52.3	22. 43. 17.02	16.93	— 0.09	99. 6. 12.82	11.09	— 1.73
Nov. 3. 7. 50. 4.9	22. 42. 56.80	56.97	+ 0.17	99. 8. 4.56	1.77	— 2.79
18. 6. 50. 49.5	22. 42. 40.05	40.24	+ 0.19	99. 9. 23.99	22.49	— 1.50
20. 6. 42. 57.8	22. 42. 40.14	40.16	+ 0.02	99. 9. 24.11	20.22	— 3.89
27. 6. 15. 30.1	22. 42. 43.82	43.93	+ 0.11	99. 8. 50.86	47.86	— 3.00
Dec. 11. 5. 20. 53.8	22. 43. 10.41	10.32	— 0.09	99. 5. 50.09	49.94	— 0.15

INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.	Mean Day, 1852.	Error in R. A.	Number of Obs.	Error in N.P.D.	Number of Obs.	Error in Ecliptic N.P.D.
January 2 to January 30	January 17	— 0°24	12	+ 1°00	12	+ 0°338
February 3 to February 25	February 15	— 0°24	12	+ 1°17	12	— 0°087
March 1 to March 29	March 15	— 0°13	13	+ 1°25	12	+ 0°377
April 1 to April 27	April 15	— 0°09	17	— 1°03	18	— 1°444
May 2 to June 2	May 14	— 0°20	8	— 0°28	9	— 0°975
June 14 to July 9	July 1	— 0°17	8	— 0°54	8	— 0°369
July 13 to July 31	July 21	— 0°14	9	— 1°37	9	— 0°938
August 2 to August 31	August 17	— 0°16	13	— 1°43	12	— 0°569
Sept. 1 to Sept. 23	September 13	— 0°07	9	— 1°59	9	— 1°049
Sept. 29 to October 19	October 11	— 0°11	8	— 1°22	8	— 0°506
Nov. 2 to Nov. 30	November 17	— 0°08	6	— 0°31	7	— 0°029
Dec. 8 to Dec. 31	December 21	— 0°12	10	— 0°01	10	— 0°008

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,
 $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$,
 and altering the number of observations so as to make the assumed weights of opposite parts of the year equal :

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} + 0.338 = + 0.4478 x - 0.8942 y + z \text{ Weight } 10 \\ - 0.087 = + 0.8292 x - 0.5590 y + z \text{ ,, } 12 \\ + 0.377 = + 0.9963 x - 0.0857 y + z \text{ ,, } 10 \end{array} \right. \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 1.444 = + 0.9015 x + 0.4329 y + z \text{ ,, } 10 \\ - 0.975 = + 0.5908 x + 0.8068 y + z \text{ ,, } 9 \\ - 0.369 = - 0.1688 x + 0.9857 y + z \text{ ,, } 8 \end{array} \right. \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 0.938 = - 0.4815 x + 0.8764 y + z \text{ ,, } 10 \\ - 0.569 = - 0.8158 x + 0.5783 y + z \text{ ,, } 12 \\ - 1.049 = - 0.9871 x + 0.1599 y + z \text{ ,, } 10 \end{array} \right. \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 0.506 = - 0.9493 x - 0.3143 y + z \text{ ,, } 9 \\ - 0.029 = - 0.5686 x - 0.8226 y + z \text{ ,, } 8 \\ - 0.008 = - 0.0023 x - 1.0000 y + z \text{ ,, } 10 \end{array} \right.
 \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1852.

Equations multiplied by the Weights.

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} + 3.380 = + 4.4780 x - 8.9420 y + 10 z \\ - 1.044 = + 9.9504 x - 6.7080 y + 12 z \\ + 3.770 = + 9.9630 x - 0.8570 y + 10 z \end{array} \right. \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} - 14.440 = + 9.0150 x + 4.3290 y + 10 z \\ - 8.775 = + 5.3172 x + 7.2612 y + 9 z \\ - 2.952 = - 1.3504 x + 7.8856 y + 8 z \end{array} \right. \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 9.380 = - 4.8150 x + 8.7640 y + 10 z \\ - 6.828 = - 9.7896 x + 6.9396 y + 12 z \\ - 10.490 = - 9.8710 x + 1.5990 y + 10 z \end{array} \right. \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 4.554 = - 8.5437 x - 2.8287 y + 9 z \\ - 0.232 = - 4.5488 x - 6.5808 y + 8 z \\ - 0.080 = - 0.0230 x - 10.0000 y + 10 z \end{array} \right.
 \end{array}$$

New Equations formed by adding and subtracting those above, as indicated below :

$$\begin{array}{l}
 \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\
 - 51.625 = - 0.2179 x + 0.8619 y + 118 z \\
 \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\
 + 11.503 = + 74.9643 x + 5.0757 y \\
 \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\
 54.105 = + 22.7697 x - 72.6949 y
 \end{array}$$

Solution of these Equations :

$$\begin{array}{l}
 x = + 0.200 \\
 y = - 0.682 \\
 z = - 0.432
 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic N. P. D. is positive, or the assumed Ecliptic is south of the Sun's true path, by $0''.200$; and therefore that the right ascensions of all stars ought to be increased by $\frac{0''.200}{15 \times \sin 23^\circ.28'} = 0''.033$.

The second term indicates that the obliquity assumed in the Nautical Almanac ought to be diminished by $0''.682$.

The third term indicates that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $0''.864$.

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES of the SUN and PLANETS.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1852.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 2 to Jan. 30	12	12	January 17	— 0.24	+ 1.00	— 3.49	+ 0.34
Feb. 3 to Feb. 25	12	12	February 15	— 0.24	+ 1.17	— 3.70	— 0.09
March 1 to March 29	13	12	March 15	— 0.13	+ 1.25	— 2.29	+ 0.38
April 1 to April 27	17	18	April 15	— 0.09	— 1.03	— 0.86	— 1.44
May 2 to June 2	8	9	May 14	— 0.20	— 0.28	— 2.68	— 0.98
June 14 to July 9	8	8	July 1	— 0.17	— 0.54	— 2.38	— 0.37
July 13 to July 31	9	9	July 21	— 0.14	— 1.37	— 2.21	— 0.94
Aug. 2 to Aug. 31	13	12	August 17	— 0.16	— 1.43	— 2.68	— 0.57
Sep. 1 to Sep. 23	9	9	September 13	— 0.07	— 1.59	— 1.59	— 1.05
Sep. 29 to Oct. 19	8	8	October 11	— 0.11	— 1.22	— 1.98	— 0.51
Nov. 2 to Nov. 30	6	7	November 17	— 0.08	— 0.31	— 1.18	— 0.03
Dec. 8 to Dec. 31	10	10	December 21	— 0.12	— 0.01	— 1.65	— 0.01

MERCURY.

Feb. 2 to Feb. 20	3	3	February 15	— 0.32	+ 4.13	— 5.38	+ 2.90
March 5	1	1	March 6	— 0.05	— 0.78	— 0.39	— 1.00
April 2 to April 15	6	5	April 9	— 0.06	— 4.46	+ 0.64	— 4.50
July 6 to July 8	3	3	July 7	+ 0.57	+ 0.20	+ 7.78	— 1.26
July 29 to Aug. 13	3	3	August 6	— 0.02	+ 5.49	+ 1.81	+ 5.19
Sep. 15 to Oct. 1	2	2	September 24	— 0.05	— 3.57	— 2.08	— 3.00
Nov. 27	1	1	November 27	— 0.16	+ 0.68	— 2.14	+ 0.75

VENUS.

Jan. 6 to Jan. 29	4	4	January 17	— 0.13	— 1.72	— 1.21	— 2.25
Feb. 6 to Feb. 20	4	4	February 13	+ 0.11	— 3.56	+ 2.93	— 2.61
March 4 to March 20	8	8	March 11	+ 0.24	— 3.95	+ 4.71	— 2.44
April 1 to April 20	11	10	April 10	+ 0.44	— 1.62	+ 6.28	— 0.41
April 24 to May 24	7	7	May 8	+ 0.42	+ 2.45	+ 5.71	+ 2.30
July 3 to July 22	9	9	July 10	+ 1.21	— 0.21	+ 16.98	— 4.31
Aug. 4 to Aug. 26	4	3	August 16	+ 0.36	— 6.42	+ 4.24	— 7.12

VENUS—*concluded.*

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1852.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Aug. 30 to Sept. 13	4	4	September 5	+ 0.10	— 6.08	+ 0.16	— 6.25
Oct. 11 to Nov. 5	7	7	October 24	— 0.19	— 3.03	— 3.80	— 1.69
Nov. 26 to Dec. 8	6	6	December 2	— 0.43	— 1.62	— 6.52	+ 0.65
Dec. 13 to Dec. 30	5	5	December 22	— 0.64	— 2.12	— 9.40	+ 0.04

MARS.

Jan. 5 to Jan. 30	9	9	January 20	— 1.34	— 19.75	— 22.98	— 14.42
Feb. 3 to Feb. 28	10	10	February 15	— 1.41	— 13.02	— 21.43	— 9.00
March 2 to March 27	15	15	March 14	— 1.10	— 7.51	— 16.18	— 4.58
April 1 to April 26	11	10	April 12	— 0.81	— 4.25	— 11.95	— 1.57

VESTA.

Sept. 21 to Oct. 11	4	4	October 4	+ 1.68	+ 4.33	+ 23.26	+ 10.88
Oct. 18 to Nov. 3	5	5	October 27	+ 1.72	+ 5.85	+ 23.27	+ 13.05
Nov. 16 to Dec. 15	5	5	December 2	+ 1.70	+ 6.62	+ 22.14	+ 14.55
Dec. 20 to Dec. 30	3	3	December 26	+ 1.54	+ 6.63	+ 19.60	+ 13.88

JUNO.

Aug. 9	1	1	August 10	+ 14.75	— 59.00	+ 226.03	+ 33.31
Aug. 31 to Sept. 24	10	10	September 12	+ 18.92	— 71.88	+ 289.90	+ 46.44
Oct. 5 to Oct. 23	4	4	October 15	+ 19.31	— 56.01	+ 287.31	+ 63.98
Nov. 3	1	1	November 3	+ 17.41	— 39.61	+ 254.65	+ 67.27
Nov. 27 to Dec. 8	2	2	December 2	+ 14.40	— 25.31	+ 207.95	+ 62.77
Dec. 15 to Dec. 20	3	3	December 17	+ 13.00	— 23.22	+ 188.87	+ 56.31

PALLAS.

Jan. 23 to Feb. 3	3	3	January 29	— 1.37	— 10.28	— 18.49	— 16.05
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CERES.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1852.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 5 to Jan. 9	3	3	January 7	+ 16.34	— 3.81	+ 214.80	— 16.38
Jan. 23 to Feb. 18	7	7	February 4	+ 14.51	— 12.94	+ 188.79	— 17.00
Feb. 25 to March 9	6	6	March 4	+ 11.80	— 13.02	+ 153.32	— 16.80

JUPITER.

Jan. 5 to Jan. 28	7	7	January 15	— 0.96	— 1.04	— 13.57	+ 2.75
Feb. 6 to Feb. 29	7	7	February 16	— 1.02	— 0.15	— 14.17	+ 3.58
March 3 to March 23	7	7	March 15	— 1.08	— 1.27	— 15.28	+ 2.65
April 1 to April 27	12	12	April 16	— 1.14	— 0.52	— 15.94	+ 3.77
May 1 to May 15	7	7	May 8	— 1.12	— 0.29	— 15.60	+ 4.17
May 31 to June 30	10	11	June 16	— 1.07	— 0.80	— 15.05	+ 3.83

SATURN.

Jan. 5 to Jan. 10	5	5	January 7	— 1.04	— 7.31	— 11.84	— 12.33
Jan. 19 to Feb. 6	5	5	January 26	— 1.07	— 6.44	— 12.56	— 11.65
Sept. 1 to Sept. 21	3	3	September 11	— 0.48	— 9.46	— 4.07	— 11.02
Oct. 5 to Oct. 26	7	7	October 17	— 0.57	— 9.68	— 5.18	— 11.64
Nov. 2 to Nov. 27	5	5	November 14	— 0.72	— 9.38	— 7.25	— 12.07
Dec. 8 to Dec. 31	7	7	December 21	— 0.68	— 8.93	— 6.72	— 11.55

URANUS.

Jan. 5 to Jan. 23	7	7	January 11	+ 10.85	— 57.23	+ 169.71	+ 2.31
Aug. 29 to Sept. 29	7	7	September 12	+ 12.06	— 56.48	+ 184.49	+ 3.07
Oct. 5 to Oct. 28	8	8	October 17	+ 12.23	— 58.64	+ 187.70	+ 2.86
Nov. 2 to Nov. 27	5	5	November 13	+ 12.00	— 59.65	+ 185.34	+ 1.59
Dec. 8 to Dec. 30	7	7	December 19	+ 11.72	— 58.65	+ 181.27	+ 2.12

NEPTUNE.

July 31 to Aug. 13	5	5	August 7	+ 0.26	— 2.34	+ 4.46	— 0.70
Aug. 31 to Sept. 22	10	10	September 11	+ 0.16	— 2.44	+ 3.12	— 1.36
Sept. 29 to Oct. 26	10	10	October 12	+ 0.14	— 3.36	+ 3.19	— 2.33
Nov. 3 to Dec. 11	5	5	November 22	+ 0.08	— 2.27	+ 1.95	— 1.66

ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.

MERCURY.

Day, 1852.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.					Error of Tables in Hel. E. P. D.
February 15	"	"	"	"	"	"
	$-5.38 = +0.252 \delta L - 123967 \delta \rho + 0.748 \delta l + 58435 \delta r$					$+7.69$
March 6	$-0.39 = +0.281$	-51327	$+0.720$	$+20933$		-3.34
April 9	$+0.64 = -0.071$	$+229200$	$+1.069$	-77316		-11.69
July 7	$+7.78 = +0.231$	$+79083$	$+0.771$	-26580		-4.74
August 6	$+1.81 = +0.017$	$+224710$	$+0.982$	-103010		$+10.21$
September 24	$-2.08 = +0.096$	-183700	$+0.904$	$+56645$		-10.25
November 27	$-2.14 = +0.175$	$+159810$	$+0.825$	-63818		$+2.12$

VENUS.

January 17	$-1.21 = +0.396 \delta L + 85373 \delta \rho + 0.604 \delta l - 62908 \delta r$					-4.52
February 13	$+2.93 = +0.371$	$+113580$	$+0.629$	-83045		-4.79
March 11	$+4.71 = +0.328$	$+149472$	$+0.672$	-108145		-3.96
April 10	$+6.28 = +0.233$	$+204132$	$+0.766$	-145972		-0.55
May 8	$+5.71 = +0.041$	$+277625$	$+0.957$	-197520		$+2.37$
July 10	$+16.98 = -2.179$	$+262972$	$+3.191$	-176730		-1.82
August 16	$+4.24 = -1.256$	-413705	$+2.247$	$+296870$		-3.70
September 5	$+0.16 = -0.441$	-382925	$+1.438$	$+275114$		-4.41
October 24	$-3.80 = +0.196$	-227730	$+0.804$	$+164787$		-2.07
December 2	$-6.52 = +0.328$	-152857	$+0.672$	$+111395$		$+1.04$
December 22	$-9.40 = +0.361$	-124915	$+0.639$	$+91441$		$+0.05$

MARS.

January 20	$-22.98 = +2.480 \delta L - 19789 \delta \rho - 1.482 \delta l + 33095 \delta r$					-5.80
February 15	$-21.43 = +2.190$	$+83221$	-1.192	-139573		-3.93
March 14	$-16.18 = +1.560$	$+115220$	-0.561	-192690		-2.52
April 12	$-11.95 = +1.140$	$+104457$	-0.140	-173250		-1.11

VESTA.

Day, 1852.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
October 4	$+ 23.26 = + 1.490 \delta L - 30155 \delta \rho$	$+ 7.88 + 5504 \delta \rho$
October 27	$+ 23.27 = + 1.639 - 8436$	$+ 8.28 + 5846$
December 2	$+ 22.14 = + 1.482 + 27689$	$+ 9.18 + 4631$
December 26	$+ 19.60 = + 1.249 + 36172$	$+ 9.87 + 3126$

JUNO.

August 10	$+ 226.03 = + 1.448 \delta L - 47567 \delta \rho$	$+ 20.53 - 799 \delta \rho$
September 12	$+ 289.90 = + 1.817 - 17126$	$+ 26.25 + 2140$
October 15	$+ 287.31 = + 1.772 + 35997$	$+ 31.60 + 5789$
November 3	$+ 254.65 = + 1.543 + 56867$	$+ 32.63 + 7079$
December 2	$+ 207.95 = + 1.196 + 64709$	$+ 32.76 + 7041$
December 17	$+ 188.87 = + 1.064 + 62089$	$+ 30.92 + 6115$

PALLAS.

January 29	$- 18.49 = + 0.996 \delta L + 67753 \delta \rho$	$- 10.01 + 19221 \delta \rho$
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CERES.

January 7	$+ 214.80 = + 1.594 \delta L + 7340 \delta \rho$	$- 9.52 - 3031 \delta \rho$
February 4	$+ 188.79 = + 1.412 + 29701$	$- 7.58 - 3395$
March 4	$+ 153.32 = + 1.156 + 36306$	$- 7.44 - 2747$

JUPITER.

January 15	$- 13.57 = + 0.929 \delta L - 5906 \delta \rho + 0.071 \delta l + 32630 \delta r$	$+ 2.92$
February 16	$- 14.17 = + 1.015 - 7142 - 0.015 + 39186$	$+ 3.47$
March 15	$- 15.28 = + 1.109 - 6686 - 0.109 + 36325$	$+ 2.36$
April 16	$- 15.94 = + 1.205 - 3524 - 0.205 + 19011$	$+ 3.12$
May 8	$- 15.60 = + 1.230 - 68 - 0.230 + 301$	$+ 3.39$
June 16	$- 15.05 = + 1.167 + 5573 - 0.167 - 29642$	$+ 3.26$

SATURN.

Day, 1852.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.				Error of Tables in Hel. E. P. D.
	"				"
January 7	$- 11.84 = + 1.021 \delta L + 2385 \delta \rho - 0.021 \delta l - 22510 \delta r$				$- 12.01$
January 26	$- 12.56 = + 0.986 + 2336 + 0.014 - 21971$				$- 11.75$
September 11	$- 4.07 = + 1.060 - 2247 - 0.060 + 20523$				$- 10.35$
October 17	$- 5.18 = + 1.112 - 1013 - 0.112 + 9287$				$- 10.46$
November 14	$- 7.25 = + 1.119 + 396 - 0.119 - 4163$				$- 10.78$
December 21	$- 6.72 = + 1.078 + 1954 - 0.077 - 18217$				$- 10.69$

URANUS.

January 11	$+ 169.71 = + 1.009 \delta L + 511 \delta \rho - 0.009 \delta l - 10357 \delta r$				$+ 2.29$
September 12	$+ 184.49 = + 1.035 - 412 - 0.035 + 8069$				$+ 2.96$
October 17	$+ 187.70 = + 1.052 - 124 - 0.052 + 2416$				$+ 2.72$
November 13	$+ 185.34 = + 1.051 + 144 - 0.051 - 2915$				$+ 1.51$
December 19	$+ 181.27 = + 1.031 + 423 - 0.031 - 8604$				$+ 2.05$

NEPTUNE.

August 7	$+ 4.46 = + 1.031 \delta L - 108 \delta \rho - 0.031 \delta l + 3083 \delta r$				$- 0.68$
September 11	$+ 3.12 = + 1.034 + 33 - 0.034 - 1114$				$- 1.32$
October 12	$+ 3.19 = + 1.026 + 148 - 0.026 - 4564$				$- 2.27$
November 22	$+ 1.95 = + 1.004 + 224 - 0.005 - 6852$				$- 1.65$

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE, 1852.

Day, 1852.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1852.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Jan. 1	"	"		"	"		April 3	"	"	JH	"	"	
2				- 4.25	- 8.54	R	4	+ 11.60	- 4.73	R	+ 11.70	- 4.48	H
3	+ 6.55	- 4.70	R	+ 5.51	- 5.32	D	5	+ 10.99	+ 0.77	H	+ 7.74	- 4.87	D
4	+ 9.35	- 5.96	M	+ 9.94	- 7.68	E	8	+ 9.69	- 0.05		+ 6.89	- 4.58	JH
5	+ 9.69	- 6.07	D	+ 8.51	- 1.39	H	9				+ 2.73	- 1.28	R
6	+ 11.92	- 5.09	H	+ 12.93	- 7.61	E	10				- 1.66	+ 3.37	H
7	+ 15.25	- 5.50	E	+ 14.07	- 3.89	R	13				- 3.44	+ 4.73	JH
8				+ 11.05	- 8.00	D	21				- 2.38	+ 3.10	R
9	+ 14.24	- 6.49	D	+ 15.89	- 2.41	H	22				- 2.71	- 1.74	H
10				+ 11.53	- 4.50	E	24				+ 11.60	+ 2.80	JH
11	+ 15.84	- 2.63	E	+ 8.95	- 4.85	R	25				+ 12.44	- 3.94	D
13				+ 16.13	- 3.70	D	26	+ 3.86	- 7.88	R	+ 11.84	- 6.42	H
15				+ 23.56	- 1.16	H	27	+ 4.45	- 8.21	H	+ 11.43	- 11.46	D
16				+ 12.93	+ 2.98	D	29				+ 14.59	- 7.47	JH
17				+ 7.66	+ 5.53	R					+ 6.80	- 11.62	H
18				+ 0.18	+ 7.38	H	May 1	+ 7.56	- 5.69	H	+ 15.65	- 6.29	JH
23				- 1.65	+ 11.36	E	2	+ 11.06	- 0.73	M	+ 8.45	- 3.08	D
25	- 2.11	+ 1.11	M	- 0.56	+ 4.67	D	3	+ 10.88	- 0.05	JH	+ 11.96	+ 0.75	JB
26	- 1.78	+ 1.76	WE	+ 1.85	+ 3.98	R	4	+ 10.35	- 2.47	D	+ 6.90	- 0.87	H
27				+ 1.30	- 1.88	E	5				+ 13.29	- 3.93	JH
28	- 0.70	- 3.27	JH	- 0.71	- 1.46	JB	7	+ 5.89	+ 2.01	JB			
29	+ 2.48	- 5.89	R	- 0.94	- 4.78	WE	10				+ 4.54	+ 2.22	JB
30	+ 4.45	- 6.00	WE	+ 4.66	- 5.87	JB	22				+ 10.34	+ 0.67	R
				+ 8.11	- 6.11	JH	24	+ 7.56	- 5.85	JH	+ 6.05	+ 1.44	H
Feb. 1	+ 7.26	- 8.37	M	+ 10.84	- 9.86	WE	29				+ 5.79	- 0.30	R
2	+ 9.38	- 1.61	JB	+ 16.94	- 3.51	R	31	+ 9.16	+ 0.57	D			
3	+ 9.74	- 5.37	M	+ 14.01	- 8.70	WE	June 1				+ 12.90	+ 0.31	JH
5				+ 15.43	- 7.48	D	2				+ 6.62	- 1.39	D
6	+ 17.46	- 5.19	JH	+ 11.53	- 8.47	R	4	+ 8.34	+ 0.29	D	+ 8.65	- 0.92	R
7				+ 13.79	- 3.59	H	10				+ 5.30	- 8.83	R
8				+ 13.22	- 0.23	R	11				+ 4.08	- 5.58	JH
9	+ 12.23	- 1.83	H	+ 9.46	+ 0.47	JH	19				+ 15.05	- 4.69	D
10				+ 6.99	+ 1.40	D	21				+ 16.90	- 1.04	R
11	+ 9.38	+ 2.78	D	+ 7.37	+ 4.52	WE	22	+ 12.46	- 6.08	JH	+ 13.64	- 2.06	H
22				- 7.69	- 1.59	R	23				+ 14.28	- 0.65	D
25	- 2.43	- 2.99	D	- 0.94	- 2.30	H	24				+ 11.70	- 1.08	JH
26				- 1.51	- 4.04	M	26	+ 5.80	- 1.10	JH	+ 10.55	+ 1.92	H
27	+ 1.56	- 3.52	H	+ 7.26	- 5.15	D	27	+ 4.16	+ 2.19	R	+ 4.18	+ 1.14	D
28				+ 10.30	- 2.67	R	29	+ 5.24	+ 5.58	D	+ 6.46	+ 4.77	R
29	+ 5.06	- 6.11	M	+ 8.82	- 3.24	H	30				+ 11.55	+ 9.33	H
Mar. 1				+ 6.22	- 8.75	R	July 1	+ 5.58	+ 5.91	R	+ 6.00	+ 7.58	JB
2	+ 11.19	- 4.45	JH	+ 8.50	- 8.58	M	2	+ 6.59	+ 8.38	H	+ 5.10	+ 4.87	M
3	+ 8.09	- 6.09	R	+ 8.12	- 8.59	D	3	+ 4.14	+ 5.34	JH	+ 6.60	+ 4.06	R
4	+ 11.64	- 6.07	H	+ 10.47	- 9.63	JB	4	+ 9.84	+ 2.49	R	+ 7.62	+ 0.04	H
5	+ 13.23	- 3.23	D	+ 14.40	- 7.88	JH	5				+ 8.47	- 1.41	JH
6	+ 11.98	+ 0.07	JB	+ 11.14	- 7.38	H	6	+ 8.15	- 1.50	R	+ 4.63	- 5.08	H
7				+ 8.91	- 5.62	D	7				+ 1.62	- 6.74	JH
14				- 0.35	+ 5.33	H	8	+ 7.03	- 3.59	R	+ 0.07	- 5.60	H
22				- 8.05	+ 0.39	R	9	+ 5.51	- 6.08	H	+ 5.51	- 9.15	JH
23				+ 0.10	+ 1.97	D	10	+ 5.00	- 4.37	M	+ 6.75	- 6.09	R
25				+ 6.02	+ 0.73	H	20				+ 25.62	+ 1.13	M
26				+ 4.14	- 1.26	D	21				+ 19.53	+ 0.34	JB
27				+ 10.41	- 2.10	R	22				+ 12.40	+ 5.04	M
28	+ 3.47	- 5.21	M	+ 17.36	- 6.43	JH	23	+ 10.21	- 2.69	JB	+ 7.23	+ 4.30	H
30	+ 13.67	- 10.09	JH	+ 13.56	- 5.30	H	24				+ 5.69	+ 0.92	R
April 1	+ 7.73	- 6.64	H	+ 14.30	- 11.44	JH	27	+ 9.16	+ 3.39	D	+ 7.88	+ 4.53	M
2	+ 10.63	- 8.01	D	+ 11.90	- 9.12	R	29				+ 12.63	+ 5.84	D

ERRORS of the MOON'S TABULAR PLACE—continued.

Day, 1852.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1852.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
July 30	+ 5.29	+ 5.18	R	+ 12.08	+ 3.59	JH	Oct. 11	"	"		+ 24.95	- 14.13	JH
31	+ 10.01	+ 6.05	HB	+ 9.90	+ 6.35	D	15				+ 40.43	- 7.09	R
Aug. 1				+ 10.25	+ 2.97	R	17				+ 22.10	+ 5.19	JH
2	+ 12.40	+ 0.01	D	+ 12.17	+ 0.48	JH	18	+ 9.88	+ 6.09	R	+ 6.15	+ 5.45	D
3	+ 8.83	+ 0.79	JH	+ 6.53	- 4.08	R	19	+ 9.01	+ 5.31	JH	+ 5.97	+ 5.01	H
4	+ 8.97	- 0.29	R	+ 5.05	- 4.89	D	20	+ 7.73	+ 4.09	D	+ 5.33	+ 4.45	R
5				- 0.81	- 6.01	M	21				+ 6.76	+ 5.38	JH
6				+ 4.66	- 6.30	JH	22				+ 7.24	+ 1.84	D
7	+ 8.93	- 8.37	G	+ 9.16	- 7.47	R	23	+ 7.25	+ 2.24	JH	+ 7.68	+ 0.47	H
8				+ 6.40	- 8.59	JH	24	+ 7.14	+ 0.88	D	+ 6.18	- 1.41	R
9	+ 3.49	- 5.21	JH	+ 0.22	- 9.91	D	25	+ 9.00	- 1.88	H	+ 10.63	- 0.30	JH
10				+ 3.46	- 7.11	M	26	+ 10.69	- 0.50	R	+ 10.76	- 5.78	D
18				+ 34.98	- 4.85	JH	27				+ 11.25	- 6.76	H
19				+ 25.65	- 3.14	R	28	+ 14.92	- 4.16	D	+ 17.53	- 3.41	R
21				+ 7.73	+ 0.37	H	29	+ 14.20	- 3.88	H	+ 13.45	- 3.61	JH
22	+ 5.09	- 3.11	M	+ 9.80	+ 0.11	JH	30				+ 13.80	- 0.79	D
25				+ 7.12	+ 2.93	D	31	+ 8.43	- 5.55	JH	+ 10.64	- 7.03	H
26	+ 11.44	+ 3.64	JH	+ 11.58	+ 6.17	H	Nov. 2	+ 5.09	- 6.04	R	+ 9.60	- 11.05	JH
27				+ 14.44	+ 3.04	R	3	+ 8.63	- 8.76	JH	+ 1.65	- 10.29	M
28	+ 14.20	+ 4.15	H	+ 17.90	+ 3.57	JH	5				+ 14.10	- 12.49	M
29	+ 16.95	+ 2.66	M	+ 13.55	- 0.45	D	7				+ 14.57	- 10.75	R
30	+ 18.24	+ 0.80	R	+ 16.12	- 3.42	H	16				+ 10.75	+ 9.44	D
31	+ 15.30	- 0.82	D	+ 8.61	- 4.70	M	17	+ 4.04	+ 4.57	H	+ 7.00	+ 7.83	R
Sep. 1	+ 11.42	- 0.12	H	+ 10.64	- 2.49	R	18	+ 5.83	+ 5.39	D	+ 6.67	+ 4.38	JH
2	+ 7.78	- 1.27	R	+ 4.69	- 4.36	D	19				+ 3.59	+ 2.13	H
3				+ 2.28	- 6.00	H	20				+ 13.33	+ 0.83	D
4				+ 7.45	- 6.17	JB	24	+ 7.65	- 3.77	JH	+ 6.66	- 6.74	H
5				+ 5.79	- 6.28	R	26	+ 9.63	- 6.26	H	+ 11.33	- 7.45	JH
7				+ 5.93	- 10.25	M	27	+ 10.24	- 6.50	D	+ 11.95	- 6.27	R
8				+ 5.04	- 12.12	H	28	+ 9.80	- 4.33	JH	+ 10.45	- 6.05	H
11				+ 12.78	- 10.73	M	29	+ 8.20	- 3.05	R	+ 2.40	- 3.05	D
16				+ 36.32	- 3.12	H	30	+ 5.61	- 4.20	H	- 4.79	- 5.06	JH
17				+ 33.16	- 2.77	JH	Dec. 1				+ 12.28	- 1.89	R
18				+ 24.26	- 2.86	JB	2	+ 8.00	- 4.01	JH	+ 9.00	- 4.60	JH
20				+ 8.46	+ 5.73	M	3				+ 9.70	- 6.48	H
21				+ 8.87	+ 1.09	JB	15	+ 9.41	+ 3.41	H	+ 9.88	+ 6.80	JH
22				+ 7.35	+ 2.13	H	17	+ 6.42	+ 0.85	JH	+ 9.97	+ 2.37	H
23	+ 4.72	+ 1.93	JB	+ 6.12	+ 7.74	R	18	+ 5.81	- 0.12	D	+ 5.08	- 2.98	R
24	+ 5.11	+ 0.65	H	+ 8.63	+ 2.23	JH	19				+ 4.07	- 2.69	JH
25	+ 8.11	+ 4.15	R	+ 12.53	+ 1.75	JB	20	+ 5.86	- 6.04	R	+ 10.61	- 6.06	D
26				+ 13.23	+ 1.15	H	21	+ 10.03	- 6.17	H	+ 15.71	- 3.74	JH
28				+ 15.03	- 6.16	H	22				+ 2.98	- 4.16	R
29	+ 18.51	- 1.86	R	+ 13.33	- 4.78	JH	24				+ 6.57	- 9.19	D
30				+ 10.55	- 7.78	M	25				+ 5.89	- 7.86	JH
Oct. 2	+ 5.57	- 4.71	R	+ 1.14	- 9.57	H	26				+ 7.24	- 5.66	D
3	+ 7.05	- 6.62	H	+ 1.97	- 8.56	JH	27	+ 7.38	- 6.39	JH	+ 9.54	- 8.25	R
4	+ 5.35	- 6.66	JH	+ 9.14	- 8.42	JB	28	+ 6.25	- 3.07	JB	- 1.38	- 3.84	M
5				+ 7.67	- 8.14	R	29				+ 1.72	- 4.32	JH
6	+ 12.50	- 11.58	R	+ 2.88	- 11.30	H	30	+ 6.53	- 2.89	JH	- 4.27	- 3.76	H
8				+ 9.26	- 9.54	JB	31				+ 4.12	- 6.54	D

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS OF γ DRACONIS

WITH THE

REFLEX ZENITH TUBE,

AND

REDUCTION OF THE OBSERVATIONS.

1851 and 1852.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1851 and 1852.

Day and Hour of Observation, 1851.	Observer.	Position of Mic. A.	Wiro used.	Micrometer Readings.		Level Readings.		Equiv- alent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1851, Jan. 1.	Mean Zenith Distance North, 1851, Jan. 1.	
				A	B									
				r	r	div.	div.	"	"	"	"			
September ^{d h} " 9. 7	GBA	Right Left	15 16	52.874 52.874	29.350 32.244	21.6 14.7	80.5 74.0	0.66 0.57	— 37.95 + 304.81	171.14	133.19 133.67	— 22.15	111.04 111.52	
September 11. 7	GBA	Right	15	52.872	29.300	24.5	82.0	0.69	— 37.13		134.01		— 22.21	111.80
September 13. 6	D	Right	15	49.666	32.525	21.6	80.0	0.66	— 37.43		133.71		— 22.27	111.44
September 29. 5	GBA	Right	15	51.195	31.000	18.0	77.3	0.62	— 37.45		133.69		— 22.25	111.44
October 11. 4 " "	GBA	Left Right	16 15	50.737 47.907	34.311 34.311	24.2 17.2	81.2 74.5	0.68 0.59	+ 303.74 — 37.81		132.60 133.33		— 21.26	111.34 112.07
November 13. 2 " "	HB	Right Left	15 16	49.264 49.264	34.007 35.989	28.2 30.0	90.3 91.8	0.77 0.79	— 55.67 + 307.30	181.48	125.81 125.82	— 14.96	(110.85) (110.86)	
November 14. 2 " "	HB	Left Right	16 15	49.264 47.223	35.458 35.458	28.1 9.2	91.0 71.5	0.77 0.52	+ 298.37 — 45.51	171.14	127.23 125.63	— 14.70	112.53 110.93	
November 25. 2 " "	HB	Left Right	16 15	47.203 45.705	37.159 37.159	20.0 18.2	83.5 81.8	0.67 0.65	+ 292.22 — 48.71		121.08 122.43	— 11.60	109.48 110.83	
1852. May 31. 13 " "	D	Left Right	16 15	48.893 49.374	34.472 34.472	17.0 22.3	78.3 83.8	0.62 0.69	+ 275.44 — 65.22	171.40	104.04 106.18	1852, Jan. 1. + 4.24	1852, Jan. 1. 108.28 110.42	
June 3. 13 " "	JH	Left Right	16 15	49.393 49.472	34.214 34.214	16.2 25.4	75.5 84.7	0.59 0.71	+ 279.48 — 62.56		108.08 108.84	+ 3.31	111.39 112.15	
June 4. 13 " "	D	Right Left	15 16	49.630 49.630	34.215 33.755	23.0 14.4	83.2 75.0	0.69 0.58	— 65.20 + 275.73		106.20 104.33	+ 3.00	109.20 107.33	
June 10. 12 $\frac{1}{2}$ " "	H	Left Right	16 15	49.792 49.813	33.872 33.872	17.5 23.5	78.0 86.5	0.62 0.71	+ 280.47 — 62.54		109.07 108.86	+ 1.13	110.20 109.99	
June 14. 12 " "	H	Left Right	16 15	49.813 49.682	33.910 33.910	19.5 26.0	78.8 85.2	0.64 0.72	+ 281.48 — 60.99		110.08 110.41	— 0.15	109.93 110.26	
June 15. 12 " "	R	Right Left	15 16	49.600 49.600	(33.910) 34.220	25.6 16.5	84.6 75.0	0.71 0.59	— 59.61 + 283.05		111.79 111.65	— 0.47	111.32 111.18	
June 19. 12 " "	R	Left Right	16 15	49.450 49.042	34.443 34.443	17.8 23.6	76.2 81.8	0.61 0.68	+ 284.29 — 59.15		112.89 112.25	— 1.75	111.14 110.50	
June 21. 12 " "	D	Right Left	15 16	49.025 49.025	34.444 34.868	25.8 15.0	85.0 74.3	0.72 0.58	— 58.93 + 284.26		112.47 112.86	— 2.39	110.08 110.47	

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16''.780 + \text{sum of Level Readings} \times 0''.00646$; where w , for wire 15, = 0, and, for wire 16, = $3'.38''.36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

1851. Nov. 13. A appears to have been read about $0''.6$ too great in each observation. The star was seen only momentarily.

1852. May 31. The image of the star was very flickering and confused.

June 3. The sky was covered with cloud, except near the zenith.

June 4. The star very tremulous, and the image blurred. The observation very unsatisfactory.

June 10. The image very bad.

June 15. First observation. The reading for Micrometer A was inadvertently read off instead of that for B. In the reduction it is assumed that the reading for B was the same as on the preceding evening.

June 19. The star very tremulous.

June 21. The star still tremulous, but the image better than on May 31 and June 4.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1852—*continued*.

Day and Hour of Observation, 1852.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equi- valent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1852, Jan. 1.	Mean Zenith Distance North, 1852, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"	"	"
June 23. 12 ^{d h}	R	Left	16	49.500	34.410	18.2	76.2	0.61	+ 284.58	171.40	113.18	— 3.03	110.15
" " "		Right	15	49.043	34.410	22.2	79.8	0.66	— 58.60		112.80		109.77
June 24. 12	II	Left	16	49.043	34.910	19.5	77.0	0.62	+ 285.31		113.91	— 3.35	110.56
" " "		Right	15	48.378	34.910	21.0	79.0	0.65	— 55.82		115.58		112.23
June 25. 11	JH	Right	15	48.430	34.900	22.0	80.2	0.66	— 56.53		114.87	— 3.99	110.88
" " "		Left	16	48.430	35.513	20.0	78.0	0.63	+ 285.15		113.75		109.76
June 30. 11	M	Left	16	48.430	35.587	18.5	76.5	0.61	+ 286.38		114.98	— 5.25	109.73
July 1. 11	R	Left	16	48.430	35.672	19.8	76.5	0.62	+ 287.81		116.41	— 5.55	110.86
" " "		Right	15	47.638	35.672	19.6	76.2	0.62	— 56.16		115.24		109.69
July 2. 11	II	Left	16	47.638	36.412	21.0	78.2	0.64	+ 286.96		115.56	— 5.85	109.71
July 3. 11	JH	Right	15	46.780	36.405	19.8	76.2	0.62	— 54.06		117.34	— 6.15	111.19
July 5. 11	R	Left	16	47.500	36.653	23.8	76.5	0.65	+ 288.70		117.30	— 6.75	110.55
" " "		Right	15	46.560	36.653	23.2	76.8	0.65	— 54.57		116.83		110.08
July 6. 11	JB	Right	15	47.042	36.107	20.8	74.7	0.62	— 53.46		117.94	— 7.05	110.89
" " "		Left	16	47.042	37.124	21.3	75.7	0.63	+ 288.90		117.50		110.45
July 7. 11	R	Left	16	47.106	36.990	20.2	76.5	0.63	+ 287.72		116.32	— 7.35	108.97
" " "		Right	15	46.150	36.990	21.0	76.5	0.63	— 53.32		118.08		110.73
July 8. 11	JB	Left	16	46.050	38.188	19.3	74.8	0.61	+ 290.08		118.68	— 7.65	111.03
July 9. 11	R	Left	16	45.900	38.335	19.6	73.0	0.60	+ 290.02		118.62	— 7.95	110.67
" " "		Right	15	44.750	38.335	21.5	76.5	0.63	— 52.39		119.01		111.06
July 10. 11	II	Right	15	44.772	38.334	21.0	77.5	0.64	— 52.76		118.64	— 8.22	110.42
" " "		Left	16	44.772	39.418	18.0	74.2	0.60	+ 289.27		117.87		109.65
July 14. 10	M	Left	16	45.610	38.662	17.0	73.5	0.58	+ 290.64		119.24	— 9.30	109.94
" " "		Right	15	44.393	38.662	25.0	82.0	0.69	— 51.95		119.45		110.15
July 15. 10	GBA	Right	15	44.398	38.662	26.0	80.0	0.69	— 52.04		119.36	— 9.57	109.79
" " "		Left	16	44.398	39.910	18.0	73.0	0.59	+ 291.23		119.83		110.26
July 19. 10	HB	Left	16	44.395	40.105	16.2	71.6	0.57	+ 294.44		123.04	— 10.65	112.39
" " "		Right	15	42.948	40.105	26.0	81.3	0.69	— 51.92		119.48		108.83
July 21. 10	II	Right	15	42.860	40.102	25.0	80.5	0.68	— 50.38		121.02	— 11.15	109.87
" " "		Left	16	42.860	41.512	16.7	72.0	0.57	+ 292.29		120.89		109.74

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16'' \cdot 780 + \text{sum of level readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 38'' \cdot 36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

June 23. Very tremulous.

June 30. Cloudy; but the star was well seen, and ran well along the wire throughout its whole length.

July 1. Cloudy; the star very faint and tremulous.

July 2. Cloudy; the image of the star very bad: it ran well along the wire throughout the whole length.

July 3. The star ran well along the wire.

July 6. The second bisection is the better of the two.

July 8. The bisections of the star unsatisfactory; Micrometer A was inadvertently read off instead of B in the first observation.

July 10. Cloudy.

July 14. The image good and steady, and the observation excellent.

July 15. The image unsteady and diffused.

July 19. The image tolerably good and steady. By inadvertence, the field was not properly illuminated.

July 21. The image unsteady.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1852—continued.

Day and Hour of Observation, 1852.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equiv- alent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1852, Jan. 1.	Mean Zenith Distance North, 1852, Jan. 1.	
				A	B									
				r	r	div.	div.	"	"	"	"	"	"	"
July 22. 10 ^{d h}	D	Left	16	42.860	41.512	14.8	72.1	0.56	+ 292.28	171.40	120.88	-11.40	109.48	
" "		Right	15	41.348	41.512	26.8	84.3	0.72	- 48.71		122.69		111.29	
July 23. 10	JB	Right	15	43.249	39.519	30.5	86.9	0.76	- 47.21		124.19	-11.65	112.54	
" "		Left	16	43.249	41.242	11.7	68.2	0.52	+ 294.24		122.84		111.19	
July 27. 9	D	Left	16	41.216	43.340	13.0	69.8	0.54	+ 295.35		123.95	-12.65	111.30	
" "		Right	15	39.492	43.340	27.4	84.5	0.72	- 48.23		123.17		110.52	
July 29. 9	M	Right	15	39.538	43.339	28.5	85.0	0.74	- 49.02		122.38	-13.15	109.23	
" "		Left	16	39.538	44.925	12.0	68.0	0.52	+ 293.77		122.37		109.22	
July 30. 9	R	Left	16	39.538	45.013	11.8	62.2	0.48	+ 295.21		123.81	-13.36	110.45	
" "		Right	15	37.785	45.013	28.5	84.2	0.73	- 47.68		123.72		110.36	
August 2. 9	D	Right	15	37.734	44.785	22.5	78.5	0.65	(- 42.92)		123.47	-13.99	109.48	
" "		Left	16	37.734	46.789	19.0	75.2	0.61	+ 294.87					125.91
August 3. 9	IIB	Left	16	38.435	46.127	16.8	73.5	0.58	+ 295.49			124.09	-14.20	109.89
" "		Right	15	36.648	46.127	23.8	80.0	0.67	- 47.23			124.17		109.97
August 4. 9	JII	Right	15	36.740	46.000	23.0	80.5	0.67	- 46.65			124.75	-14.41	110.34
" "		Left	16	36.740	47.930	16.0	73.5	0.58	+ 297.31			125.91		111.50
August 5. 9	R	Left	16	36.742	47.905	16.5	73.0	0.58	+ 296.92			125.52	-14.62	110.90
" "		Right	15	34.862	47.905	23.6	81.2	0.68	- 47.12	124.28		109.66		
August 6. 9	D	Right	15	34.768	47.905	23.5	81.2	0.68	- 45.54	125.86		-14.83	111.03	
" "		Left	16	34.768	49.854	16.0	73.2	0.58	+ 296.50	125.10			110.27	
August 9. 9	R	Left	16	34.770	49.868	16.5	72.4	0.58	+ 296.76	125.36		-15.42	109.94	
" "		Right	15	32.868	49.868	24.5	81.0	0.68	- 46.59	124.81			109.39	
August 10. 9	JH	Right	15	32.809	49.843	23.2	80.5	0.67	- 45.17	126.23		-15.59	110.64	
August 18. 8	D	Right	15	43.563	39.048	22.2	78.5	0.65	- 44.47	126.93		-16.95	109.98	
" "		Left	16	43.563	41.161	21.2	77.8	0.64	+ 298.28	126.88			109.93	
August 19. 8	II	Left	16	43.564	41.251	17.5	74.0	0.59	+ 299.74	128.34		-17.08	111.26	
" "		Right	15	41.300	41.251	22.0	78.5	0.65	- 43.46	127.94			110.86	
August 21. 8	R	Left	16	41.300	43.452	19.6	75.5	0.61	+ 298.71	127.31	-17.34	109.97		
" "		Right	15	39.146	43.452	22.6	79.2	0.66	- 44.25	127.15		109.81		
August 25. 8	R	Left	16	39.170	45.642	22.6	76.8	0.64	+ 299.74	128.34	-17.86	110.48		
" "		Right	15	36.863	45.642	19.9	76.8	0.63	- 42.66	128.74		110.88		

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 38'' \cdot 36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

July 22. Cloudy; the star very faint.

July 23. For the first observation, B was set down one revolution smaller.

July 30. The tube was adjusted for level.

August 2. Very cloudy; the star scarcely visible. The first observation is worthless, through disturbance of the mercury, produced by the violent closing of the porter's gate at the instant.

August 3. Very good. A was set down $41'' \cdot 435$ for the first observation.

August 4. The image bad. The reading of B (second observation) was set down $48'' \cdot 071$; but on looking at it again on the following morning, it was found to be $47'' \cdot 930$.

August 5. Very tremulous.

August 6. Very good.

August 9. The star very tremulous. The reading of B was set down one revolution smaller.

August 10. The image bad. It was found, on examination, that the screw of Micrometer B was run out, and the second observation is rejected.

August 18. Very cloudy. The first observation was made when the star was considerably past the center of the field, and the second when it was going out of the field.

August 19. Very tremulous.

August 21. Faint; cloudy.

August 25. Very tremulous.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1852—concluded.

Day and Hour of Observation, 1852.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equi- valent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1852, Jan. 1.	Mean Zenith Distance North, 1852, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"	"	"
August 26. 8 ^{d h}	JH	Right	15	36.891	45.638	20.2	76.5	0.63	— 43.07	171.40	128.33	— 17.99	110.34
" " "		Left	16	36.891	48.000	22.2	78.5	0.65	+ 301.08		129.68		111.69
August 27. 7 ^{1/2}	D	Left	16	36.891	47.933	22.0	78.3	0.65	+ 299.96		128.56	— 18.12	110.44
" " "		Right	15	34.565	47.933	20.0	76.8	0.63	— 42.54		128.86		110.74
August 28. 7	H	Right	15	40.328	42.142	21.8	77.2	0.64	— 42.09		129.31	— 18.25	111.06
" " "		Left	16	40.328	44.507	23.6	78.5	0.66	+ 300.14		128.74		110.49
August 30. 7	R	Left	16	40.328	44.488	23.6	78.5	0.66	+ 299.83		128.43	— 18.43	110.00
" " "		Right	15	38.043	44.488	18.2	74.5	0.60	— 43.07		128.33		109.90
August 31. 7	D	Right	15	38.030	44.488	19.0	77.2	0.62	— 42.87		128.53	— 18.52	110.01
" " "		Left	16	38.030	46.765	20.5	78.4	0.64	+ 299.46		128.06		109.54
September 1. 7	H	Left	16	38.031	46.798	23.0	79.5	0.66	+ 300.05		128.65	— 18.61	110.04
" " "		Right	15	35.676	46.798	20.8	77.0	0.63	— 42.15		129.25		110.64
September 2. 7	H B	Right	15	35.692	46.798	20.0	76.7	0.62	— 42.40		129.00	— 18.70	110.30
" " "		Left	16	35.692	49.206	21.8	77.8	0.64	+ 301.18		129.78		111.08
September 3. 7	R	Left	16	35.693	49.110	21.8	78.2	0.65	+ 299.60		128.20	— 18.79	109.41
" " "		Right	15	33.382	49.110	20.6	76.5	0.63	— 42.44		128.96		110.17
September 8. 7	D	Right	15	33.293	49.110	19.8	77.0	0.63	— 40.95		130.45	— 19.18	111.27
" " "		Left	16	33.293	51.600	23.0	79.5	0.67	+ 301.13		129.73		110.55
September 15. 6	H B	Left	16	46.345	38.648	21.8	81.0	0.66	+ 302.80		131.40	— 19.39	112.01
" " "		Right	15	43.792	38.648	18.8	77.2	0.62	— 41.56		129.84		110.45
September 25. 5 ^{1/2}	R	Left	16	43.790	41.178	21.8	79.0	0.65	+ 302.37		130.97	— 19.29	111.68
" " "		Right	15	41.182	41.178	20.5	78.2	0.64	— 40.24		131.16		111.87
September 29. 5	R	Left	16	41.184	43.812	23.3	81.2	0.68	+ 302.87		131.47	— 19.11	112.36
" " "		Right	15	38.763	43.812	20.8	78.6	0.64	— 43.85		127.55		108.44
October 7. 5	R	Left	16	39.445	45.443	22.2	83.6	0.68	+ 301.05		129.65	— 18.55	111.10
" " "		Right	15	36.982	45.443	19.8	81.6	0.66	— 41.35		130.05		111.50
October 20. 4	D	Left	16	36.862	47.975	19.2	81.0	0.65	+ 300.17		128.77	— 16.84	111.93
" " "		Right	15	34.546	47.975	18.0	79.8	0.63	— 42.94		128.46		111.62

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 38'' \cdot 36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

August 26. Cloudy.

August 27. The image was tremulous, and disappeared once, owing to disturbance produced by people in the park, near the Observatory gate.

August 28. Very tremulous; the image bad.

August 30. Faint and tremulous.

August 31. Very tremulous.

September 3. Tremulous.

September 8. The reading for B (second observation) is not good, the screw being near the extremity of its range. The star was not so tremulous as usual.

September 15. The observation good.

September 25. Faint and tremulous. A was set down $44' \cdot 790$ for the first observation.

September 29. Faint, and very tremulous.

October 7. Faint.

October 20. Very faint.

ROYAL OBSERVATORY, GREENWICH.

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF

ENCKE'S COMET

AND

NEIGHBOURING STARS,

OBSERVED WITH THE EAST EQUATOREAL.

1852.

RIGHT ASCENSIONS OF ENCKE'S COMET AND STARS, OBSERVED WITH THE EAST EQUATOREAL,									
Day, 1852.	Name of Equatoreal.	No. of Series.	OBJECT.	Clock Time of Transit.	Clock Slow.	Sidereal Time of Transit.	Concluded Reading of Hour Circle in Time.	Approx. Hour Angle West.	Approx. N. P. D.
Jan. 22	E	1	Comet	^{h m s} 3. 23. 58.0	^{m s} 54.17	^{h m s} 3. 24. 52.17	^{h m s} 10. 6. 45	^{h m} 4. 7	^{° /} 84. 56
		2	♈ Piscium	^{h m s} 3. 42. 4.3	^{m s} 54.17	^{h m s} 3. 42. 58.47	^{h m s} 10. 10. 22	^{h m} 4. 11	^{° /} 85. 11
Jan. 23	E	3	♈ Piscium	^{h m s} 2. 17. 18.7	^{m s} 55.01	^{h m s} 2. 18. 13.71	^{h m s} 8. 45. 45	^{h m} 2. 46	^{° /} 85. 11
		4	♈ Piscium	^{h m s} 2. 22. 0.3	^{m s} 55.01	^{h m s} 2. 22. 55.31	^{h m s} 8. 50. 25	^{h m} 2. 51	^{° /} 85. 11
		5	Comet	^{h m s} 2. 52. 33.0	^{m s} 55.03	^{h m s} 2. 53. 28.03	^{h m s} 9. 33. 59	^{h m} 3. 34	^{° /} 84. 49
		6	Comet W. B. XXIII. 444.	^{h m s} 2. 59. 45.0 ^{h m s} 3. 2. 25.5	^{m s} 55.05	^{h m s} 3. 0. 40.05 ^{h m s} 3. 20.55	^{h m s} 9. 41. 5	^{h m} 3. 42	^{° /} 84. 49 84. 43
		7	Comet W. B. XXIII. 444.	^{h m s} 3. 12. 11.0 ^{h m s} 14. 49.5	^{m s} 55.05	^{h m s} 3. 13. 6.05 ^{h m s} 15. 44.55	^{h m s} 9. 53. 29	^{h m} 3. 54	^{° /} 84. 49 84. 43

January 22. After some little search I found the Comet, which is a large diffused nebulous mass, occupying a space of several minutes. It is very faint, and I do not think it will bear any illumination. M.

January 23. The Comet was seen, and observed with considerable difficulty; it seemed fainter than on the preceding evening, though the sky was splendidly clear.

NORTH POLAR DISTANCES OF ENCKE'S COMET AND STARS, OBSERVED WITH THE EAST EQUATORIAL,												
Day, 1852.	Name of Equatorial.	No. of Series.	OBJECT.	Declination Circle.			Concluded Circle Reading.	Pointer Reading of Sector Arc.	Micro-meter Reading.	Pointer Reading and Micrometer Reading in Arc.	Approx. Hour Angle West.	Approx. N.P.D.
				Pointer.	Verniers.							
					A	B						
Jan. 22	E	1	Comet	84. 45	10. 30		84. 55. 30	29	1'977	—2. 41. 34'95	4. 7	84. 56
		2	♈ Piscium	85. 0	11. 0		85. 11. 0	26	13'958	—2. 28. 45'99	4. 11	85. 11
Jan. 23	E	3	♈ Piscium	85. 0	10. 0		85. 10. 0				2. 46	85. 11
		5	Comet	84. 45	3. 10		84. 48. 10				3. 34	84. 49
			W. B. XXIII. 444.	84. 30	12. 40		84. 42. 40					84. 43
		6	Comet					58	13'600	—5. 26. 15'12	3. 42	84. 49
			W. B. XXIII. 444.	84. 30	12. 30		84. 42. 30	59	17'180	—5. 32. 56'86		84. 43
		7	Comet					58	14'910	—5. 26. 40'27	3. 54	84. 49
			W. B. XXIII. 444.	84. 30	12. 0		84. 42. 0	59	17'460	—5. 33. 2'23		84. 43

AT THE ROYAL OBSERVATORY, GREENWICH.

Correction for Refraction in R. A.	Correction for Parallax in R. A.	Instrumental R. A. corrected for Refraction and Parallax.	Assumed R. A. of Star.	Apparent Correction for Index Error.	R. A. of Comet from the Observation.	Mean Solar Time for observation of Comet.	Interpolated R. A. of Comet.	Error of Interpolated R. A.	Observer.
s	s	h m s	h m s	s	h m s	h m s	h m s	s	
-5.81	+0.21	23. 18. 1.57			23. 17. 50.03	7. 19. 39.9	23. 17. 56.72	(+6.69)	M
-6.08		23. 32. 30.39	23. 32. 18.85	-11.54					
-2.99		23. 32. 25.72	23. 32. 18.85	-6.87					M
-3.11		23. 32. 27.20	23. 32. 18.85	-8.35					
-4.38	+0.19	23. 19. 25.84			23. 19. 16.10	6. 44. 25.0	23. 19. 18.79	(+2.69)	
-4.68	+0.20	23. 19. 30.57							
-4.66		23. 22. 10.89	23. 21. 58.78	-12.11	23. 19. 18.46	6. 51. 35.8	23. 19. 19.21	+0.75	
-5.17	+0.20	23. 19. 32.08							
-5.15		23. 22. 10.40	23. 21. 58.78	-11.62	23. 19. 20.46	7. 3. 59.8	23. 19. 19.95	-0.51	

Series 1. The index correction from Series 2.

Series 5. The index correction is the mean of all on this day.

AT THE ROYAL OBSERVATORY, GREENWICH.

Correction for Refraction in N.P.D.	Correction for Parallax in N.P.D.	N. P. D. subject to Instrumental Error.	Assumed N.P.D. of Star.	Apparent Correction for Index Error.	N.P.D. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated N.P.D. of Comet.	Error of Interpolated N.P.D.	Observer.
"	"	"	"	"	"	h m s	"	"	
+1. 59.20	-4.30	- 2. 39. 40.05			84. 57. 41.45	7. 19. 39.9	84. 56. 32.57	(-68.88)	M
+2. 3.97		- 2. 26. 42.02	85. 10. 39.48	87. 37. 21.50					
+1. 20.15		85. 11. 20.15	85. 10. 39.56						M
+1. 37.41	-4.27	84. 49. 43.14							
+1. 37.01		84. 44. 17.01	84. 42. 52.90	-1. 24.51	84. 48. 18.63	6. 44. 25.0	84. 49. 46.26	(+87.63)	
+1. 41.67	-4.28	- 5. 24. 37.73							
+1. 41.29		- 5. 31. 15.57	84. 42. 52.90	90. 14. 8.47	84. 49. 30.74	6. 51. 35.8	84. 49. 44.16	+13.42	M
+1. 49.05	-4.29	- 5. 24. 55.51							
+1. 48.60		- 5. 31. 13.63	84. 42. 52.90	90. 14. 6.53	84. 49. 11.02	7. 3. 59.8	84. 49. 40.55	+29.53	

Series 1. The index correction from Series 2.

ROYAL OBSERVATORY, GREENWICH.

ECLIPSES

OF

JUPITER'S SATELLITES,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1852.

ECLIPSES of JUPITER'S SATELLITES, 1852.

Day of Observation.	Satellite.	Phenomenon.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Mean Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
						<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>m s</small>
Jan. 18	II	Ecl. disap. . .	R	N. Eq.	A ¹	13. 50. 10 ⁰	13. 50. 29 ⁴	13. 51. 1 ²¹	17. 59. 49 ⁹⁸	17. 58. 59 ³	— 50 ⁶⁸
Jan. 18	III	(a) Ecl. reap. . . .	R	N. Eq.	A ¹	14. 22. 20 ⁰	14. 22. 39 ⁴	14. 23. 11 ²³	18. 31. 54 ⁷⁴	18. 31. 22 ⁸	— 31 ⁹⁴
Feb. 11	I	Ecl. disap. . .	M	E. Eq.	Earn.	13. 48. 40 ⁰	13. 48. 2 ⁰	13. 48. 52 ⁴⁵	16. 23. 19 ⁷⁵	16. 22. 12 ⁹	— 1. 6 ⁸⁵
Feb. 18	I	Ecl. disap. . .	HB	N. Eq.	A ¹	16. 8. 3 ⁰	16. 8. 3 ⁵	16. 8. 58 ⁶⁶	18. 15. 31 ⁶⁵	18. 15. 39 ⁵	+ 7 ⁸⁵
Apr. 13	III	Ecl. disap. . .	R	Altaz.	G ¹ .	17. 32. 55 ⁰	17. 33. 23 ¹	17. 33. 31 ⁷⁴	16. 3. 35 ⁹⁸	16. 2. 11 ⁷	— 1. 24 ²⁸
Apr. 16	II	Ecl. disap. . .	R	N. Eq.	A ¹	15. 34. 12 ⁰	15. 34. 47 ³	15. 34. 57 ⁰⁹	13. 53. 33 ⁰⁴	13. 53. 19 ⁷	— 13 ³⁴
June 24	III	Ecl. reap. . . .	JH	Altaz.	G. ¹	15. 55. 30 ⁰	15. 55. 5 ⁷	15. 56. 12 ²⁶	9. 43. 26 ⁹²	9. 46. 12 ⁰	+ 2. 45 ⁰⁸
July 9	I	Ecl. reap. . . .	R	E. Eq.	Earn.	17. 35. 30 ⁰	17. 35. 46 ²	17. 36. 8 ¹⁵	10. 24. 7 ⁷⁷	10. 23. 46 ¹	— 21 ⁶⁷

(a) This observation doubtful owing to passing clouds.

OCCULTATIONS of STARS by the MOON, 1852.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock.	Time noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
							<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>
Feb. 3	63 Geminorum	Disap. .	Dark	M	E. Equat.	Earn.	3. 28. 48 ²	3. 28. 7 ⁰	3. 28. 52 ⁸³	6. 36. 28 ⁹⁶
	63 Geminorum	Disap. .	Dark	WE	Altaz.	G ¹	3. 28. 41 ⁷	3. 28. 7 ⁶	3. 28. 53 ⁴³	6. 36. 29 ⁵⁶
Feb. 11	♌ ² Libræ	Reap. .	Dark	M	E. Equat.	Earn.	14. 34. 11 ⁰	14. 33. 33 ⁰	14. 34. 23 ⁴⁸	17. 8. 43 ³³
Sept. 24	(a) 29 Aquarii . . .	Disap. .	Dark	H	Altaz.	G ¹	23. 33. 54 ⁰	23. 33. 48 ¹	23. 34. 8 ²¹	11. 18. 24 ²⁰
Oct. 24	30 Piscium . . .	Disap. .	Dark	D	N. Equat.	A ¹	19. 29. 20 ³	19. 29. 49 ⁸	19. 30. 21 ⁴⁰	5. 17. 20 ¹¹
	33 Piscium . . .	Disap. .	Dark	D	N. Equat.	A ¹	21. 25. 48 ⁷	21. 26. 18 ²	21. 26. 49 ⁸⁵	7. 13. 29 ⁴⁷
	33 Piscium . . .	Disap. .	Dark	R	Altaz.	G ¹	21. 26. 44 ⁰	21. 26. 18 ²	21. 26. 49 ⁸⁵	7. 13. 29 ⁴⁷

(a) Star exceedingly faint.

Disappearance of 63 Geminorum, 1852, February 3, $6^h.36^m.29^s.56 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$52.13.21.45$	"	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$108.53.55.50 + x$	$+$	0.6294	$\times t$
Moon's N.P.D.	$67.38.47.08 + y$	$+$	0.0231	$\times t$
Moon's Horizontal Equatoreal Parallax	$58.42.86 \times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	$15.59.98 \times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	$109.44.23.70 + e''$			
Star's N.P.D.	$68.15.26.90 + f$	"	"	"
Geocentric R.A. of corresponding point in arc	$109.10.58.34 + e$	$+$	$0.0869 \times t - 2.0050 \times m$	
Geocentric N.P.D. of corresponding point.	$67.40.19.40 + f$	$+$	$0.0482 \times t - 2.1075 \times m$	

Geocentric distance of center from corresponding point,

$$15.50.56 + 0.9207 \times \left\{ + e - x - 0.5425 \times t - 2.0050 \times m \right\} \\ + 0.0980 \times \left\{ f + 0.0482 \times t - 2.1075 \times m \right\} \\ - 0.0962 \times \left\{ y + 0.0231 \times t \right\}$$

Final Equation.

$$+ 9.42 = + 0.9207 \times e + 0.0980 \times f - 0.9207 \times x - 0.0962 \times y - 0.4970 \times t - 2.0525 \times m - 0.9600 \times n$$

Reappearance of ϵ^3 Libræ, 1852, February 11, $17^h.8^m.43^s.33 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$218.35.52.20$	"	$+ 15.0$	$\times t$
Moon's Right Ascension in arc	$228.49.39.30 + x$	$+$	0.5646	$\times t$
Moon's N.P.D.	$103.35.27.13 + y$	$+$	0.1796	$\times t$
Moon's Horizontal Equatoreal Parallax	$58.34.66 \times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	$15.57.78 \times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	$228.41.34.95 + e''$			
Star's N.P.D.	$104.36.52.20 + f$	"	"	"
Geocentric R.A. of corresponding point in arc	$228.34.59.21 + e$	$+$	$0.1575 \times t - 0.3957 \times m$	
Geocentric N.P.D. of corresponding point.	$103.42.52.05 + f$	$-$	$0.0070 \times t - 3.1931 \times m$	

Geocentric distance of center from corresponding point,

$$16.4.03 + 0.8620 \times \left\{ - e + x + 0.4071 \times t + 0.3957 \times m \right\} \\ + 0.4611 \times \left\{ f - 0.0070 \times t - 3.1931 \times m \right\} \\ - 0.4619 \times \left\{ y + 0.1796 \times t \right\}$$

Final Equation.

$$- 6.25 = - 0.8620 \times e + 0.4611 \times f + 0.8620 \times x - 0.4619 \times y + 0.2647 \times t - 1.1312 \times m - 0.9578 \times n$$

Disappearance of 29 Aquarii, 1852, September 24, 11^h. 18^m. 24^s.20 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	353. 32. 3.15	''	''	''	+ 15.0	× t
Moon's Right Ascension in arc	328. 35. 46.35	+ x	''	''	+ 0.5197	× t
Moon's N. P. D.	106. 53. 25.26	+ y	''	''	- 0.1494	× t
Moon's Horizontal Equatoreal Parallax	55. 25.32	× $\left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	15. 6.12	× $\left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in arc	328. 35. 39.00	+ e''				
Star's N. P. D.	107. 40. 17.60	+ f	''	''		
Geocentric R. A. of corresponding point in arc	328. 50. 53.20	+ e	''	''	+ 0.1392 × t	+ 0.9142 × m
Geocentric N. P. D. of corresponding point	106. 49. 38.86	+ f	''	''	+ 0.0191 × t	- 3.0387 × m

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &14. 56.92 + 0.9262 \times \left\{ + e - x - 0.3805 \times t + 0.9142 \times m \right\} \\
 &\quad - 0.2530 \times \left\{ f + 0.0191 \times t - 3.0387 \times m \right\} \\
 &\quad + 0.2518 \times \left\{ y - 0.1494 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 9''.20 = + 0.9262 \times e - 0.2530 \times f - 0.9262 \times x + 0.2518 \times y - 0.3948 \times t + 1.6155 \times m - 0.9061 \times n$$

Disappearance of 30 Piscium, 1852, October 24, 5^h. 17^m. 20^s.11 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	292. 35. 21.00	''	''	''	+ 15.0	× t
Moon's Right Ascension in arc	358. 2. 57.30	+ x	''	''	+ 0.4628	× t
Moon's N. P. D.	96. 20. 51.50	+ y	''	''	- 0.1960	× t
Moon's Horizontal Equatoreal Parallax	54. 24.54	× $\left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	14. 49.53	× $\left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in Arc	358. 36. 8.70	+ e''				
Star's N. P. D.	96. 49. 57.50	+ f	''	''		
Geocentric R. A. of corresponding point in arc	358. 4. 56.74	+ e	''	''	+ 0.0588 × t	- 1.8720 × m
Geocentric N. P. D. of corresponding point	96. 6. 13.86	+ f	''	''	- 0.0156 × t	- 2.6236 × m

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &14. 45.63 + 0.1332 \times \left\{ + e - x - 0.4040 \times t - 1.8720 \times m \right\} \\
 &\quad - 0.9908 \times \left\{ f - 0.0156 \times t - 2.6236 \times m \right\} \\
 &\quad + 0.9908 \times \left\{ y - 0.1960 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 3''.90 = + 0.1332 \times e - 0.9908 \times f - 0.1332 \times x + 0.9908 \times y - 0.2325 \times t + 2.3501 \times m - 0.8895 \times n$$

Disappearance of 33 Piscium, 1852, October 24, 7^h. 13^m. 29^s.47 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	321. 42. 27.75	"	"	"	+ 15.0	$\times t$
Moon's Right Ascension in arc	358. 56. 38.55	+ x	"	"	+ 0.4618	$\times t$
Moon's N. P. D.	95. 58. 2.57	+ y	-	"	0.1968	$\times t$
Moon's Horizontal Equatoreal Parallax	54. 23.07	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	14. 49.15	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in Arc	359. 26. 58.95	+ e''				
Star's N. P. D.	96. 31. 53.80	+ f	"	"	"	"
Geocentric R. A. of corresponding point in arc	359. 6. 46.09	+ e	+ 0.1157	$\times t$	- 1.2529	$\times m$
Geocentric N. P. D. of corresponding point	95. 46. 45.64	+ f	- 0.0104	$\times t$	- 2.7082	$\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 15. \quad & 7.45 + 0.6625 \times \left\{ + e - x - 0.3494 \times t - 1.2529 \times m \right\} \\
 & - 0.7460 \times \left\{ f - 0.0104 \times t - 2.7082 \times m \right\} \\
 & + 0.7458 \times \left\{ y - 0.1968 \times t \right\}
 \end{aligned}$$

Final Equation.

$$- 18''.30 = + 0.6625 \times e - 0.7460 \times f - 0.6625 \times x + 0.7458 \times y - 0.3705 \times t + 1.1903 \times m - 0.8892 \times n$$

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF DISTANCE AND ANGLE OF POSITION

OF THE

COMPONENTS OF γ VIRGINIS,

AND OF THE

DIAMETERS OF PLANETS, AND OF THE RINGS OF SATURN;

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE EAST EQUATOREAL.

1852.

RESULTS of MEASURES of DISTANCE and ANGLE of POSITION, for each Day's Observations of the COMPONENTS of γ VIRGINIS, observed at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the East Equatorcal.

γ VIRGINIS. $\left\{ \begin{array}{l} \text{R. A.} = 12^{\text{h}}. 34^{\text{m}}. \\ \text{N. P. D.} = 90^{\circ}. 38'. \end{array} \right.$

Day and Mean Solar Hour.	Observed Distance.	Method of Observation.	Number of Measures.	Observed Angle of Position.	Number of Measures.	Observer.	Remarks.
d h	"			° '			
June 4. 9	3.19	Equal Distances....	10	179. 6	1	M	
July 3. 9	3.16	Equal Distances....	10	186. 10	1	M	
July 5. 9	3.24	Equal Distances....	10	173. 50	1	M	

MEASURES of the DIAMETERS of VENUS, MARS, and SATURN, made at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the East Equatorcal.

VENUS.

Day and Mean Solar Hour.	Part measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from N. A.	Apparent Error of Nautical Almanac.	Approx. Angle of Position of measured Part.	Observer.	Remarks.
d h			"	"	"	°		
July 3. 0	Diameter	10	51.93	49.20	-2.73	18	M	The planet was rather too faint, through thin hazy clouds, to enable me to bring the cusps together with perfect certainty.
	Breadth of Ill. part.	10	5.15	5.66	+0.51	108		
July 5. 1	Diameter	10	52.64	50.80	-1.84	20	M	The cusps were very distinct.
	Breadth of Ill. part.	10	5.17	4.93	-0.24	110		
July 6. 1½	Diameter	10	53.66	51.40	-2.26	20	M	
Sept. 2. 23	Diameter	10	35.60	33.00	-2.60	13	M	
	Breadth of Ill. part.	10	11.26	10.13	-1.13	103		

MARS.

Jan. 23. 8.	Equatoreal Diameter	10	15.09	13.40	-1.69	76	M	<p>The snowy pole of Mars was seen well, and the line of direction for the measure of the polar diameter was made to pass as nearly as possible through the center of it.</p> <p>Beneath the white cap round the pole the surface of the planet was very dark.</p> <p>Correction for phase of equatoreal diameter = 0".00.</p> $\epsilon = \frac{1}{77.4}$
	Polar Diameter	10	14.90	13.40	-1.50	166		

MEASURES of the DIAMETERS of MARS made with a Double-Image Micrometer on the East Equatoreal—*concluded*.

Day and Mean Solar Hour.	Part measured.	Number of Measures.	Observed Value in Arc.	Tabular Value from N. A.	Apparent Error of Nautical Almanac.	Approx. Angle of Position of measured Part.	Observer.	Remarks.
Jan. 25. 8 d h	Equatoreal Diameter	10	15.09	13.40	—1.69	65	M	Mars was not so well defined or steady as on the previous evening. A violent squall of rain occurred before the observations, but the sky was brilliantly clear afterwards. The estimated line of direction differs considerably from that on Jan. 23. Correction for phase of equatoreal diameter = 0".00. $\epsilon = \frac{1}{232.2}$
	Polar Diameter	10	15.02	13.40	—1.62	155		
Jan. 28. 11	Equatoreal Diameter	10	14.47	13.40	—1.07	69	M	Correction applied for phase of equatoreal diameter = 0".03. $\epsilon = \frac{1}{172.2}$
	Polar Diameter	10	14.38	13.40	—0.98	159		
Jan. 30. 7	Equatoreal Diameter	10	14.62	13.40	—1.22	77	M	Correction applied for phase of equatoreal diameter = 0".06. $\epsilon = \frac{1}{105.9}$
	Polar Diameter	10	14.48	13.40	—1.08	167		
Feb. 6. 9	Equatoreal Diameter	10	14.36	13.00	—1.36	86	M	Mars was very well seen. Correction applied for phase of equatoreal diameter = 0".24. $\epsilon = \frac{1}{24.3}$
	Polar Diameter	10	13.77	13.00	—0.77	176		
Feb. 18. 8	Equatoreal Diameter	10	13.30	12.00	—1.30	77	M	Correction applied for phase of equatoreal diameter = 0".72. $\epsilon = \frac{1}{42.2}$
	Polar Diameter	10	12.98	12.00	—0.98	167		

SATURN.

Day and Mean Solar Hour.	Part measured.	Number of Measures.	Observed Value in Arc.	Approx. Angle of Position of measured Part.	Observer.	Remarks.
1852. d h Dec. 21. 9	Extreme Length of outer Ring ...	8	44.60	95	M	
Dec. 24. 7	Extreme Length of outer Ring ...	6	44.66	96	M	
1853. Jan. 6. 9	Breadth of outer or extreme edge of Ring	6	15.38	180	M	
Jan. 7. 6½	Breadth of outer Ring	6	15.25	180	M	
Jan. 31. 7	Length of Ring	8	41.33	90	M	
	Breadth of Ring	6	14.32	180		
Feb. 19. 8	Length of Ring	6	40.40	89	M	
	Breadth of Ring	6	14.34	179		

The observations above were made in the ordinary way, by bringing the images of the limbs of the outer ring successively into contact on opposite sides. As this was impracticable in measuring the ball and the inner ring, the method pursued was to bring one limb of one of the images (taken as an object of reference) successively into contact with the parts of the other image whose measures were required, as is explained in the tabular arrangement which follows.

DIAMETERS OF THE RINGS OF SATURN.									
Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1852. d. h. Dec. 21. 10	Right image of left limb of ball.	Left image of right side of } exterior edge of outer ring }	r 6.252	r 10.618	r 4.366	Ball. r 1.341	r 3.025	" 21.90	S
	"	Left image of outer edge } (right) of black division. }	6.458		4.160		2.819	20.41	S
	"	" "	6.430		4.188		2.847	20.61	S
	"	Left image of inner edge } (right) of black division. }	6.492		4.126		2.785	20.16	S
	"	" "	6.555		4.063		2.722	19.71	S
	"	Left image of inner edge } (right) of inner bright ring	6.796		3.822		2.481	17.96	S
	"	Left image of right limb } of ball	7.975		2.643		1.302	9.43	S
	Left image of left limb of ball.	Right image of inner edge } (left) of inner bright ring	11.432		0.814		2.155	15.60	S
	"	Right image of exterior } edge (left) of outer ring. }	12.632		2.014		3.355	24.29	S
Dec. 30. 8	Left image of right side of exterior ring.	Right image of left side of } exterior edge of outer ring }	4.507		6.111	Ring. 3.083	3.028	21.92	M
	"	Right image of outer edge } (left) of black division. }	4.651		5.967		2.884	20.88	M
	"	Right image of inner edge } (left) of black division. }	4.818		5.800		2.717	19.67	M
	"	Right image of left side of } interior edge of inner ring }	5.338		5.280		2.197	15.91	M
	"	Right image of left limb of } ball	6.296		4.322		1.239	8.97	M
	"	Right image of right limb } of ball	9.064		1.554		1.529	11.07	M
	"	Right image of right side of } interior edge of inner ring }	9.497		1.121		1.962	14.20	M
	"	Right image of inner edge } (right) of black division. }	9.854		0.764		2.319	16.79	M
	"	Right image of outer edge } (right) of black division. }	10.179		0.439		2.644	19.14	M
	"	Right image of right side of } exterior edge of outer ring }	10.833						M

One revolution of the micrometer = $7''.239$.

Dec. 21. The observations were made by Prof. C. P. Smyth. The right image of the left limb of the ball was brought successively into contact with the parts of the right hand image mentioned in the 3d column of the above Table. For coincidence of images the mean of two readings gave $10''.657$; hence the semi-diameter of the ball is $1''.341$, as is assumed in the Table.

Dec. 30. The semi-transparent inner ring was seen pretty well. The reading for "right image of right side of exterior edge of outer ring" corresponds to coincidence of images.

DIAMETERS OF THE RINGS OF SATURN — *continued.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in [Arc.	Observer.
1852. d. h. Dec. 30. 8	Left image of left side of exterior ring.	Right image of outer edge of dark division (left) ... }	r 11.046	r 10.618	r 0.428	r 3.083	r 2.655	" 19.22	M
	"	Right image of inner edge of dark division (left) ... }	11.303		0.685		2.398	17.36	M
	"	Right image of left side of interior edge of inner ring }	11.779		1.161		1.922	13.91	M
	"	Right image of left limb of ball..... }	12.627		2.009		1.074	7.78	M
	"	Right image of right limb of ball..... }	14.875		4.257		1.174	8.50	M
	"	Right image of right side of interior edge of inner ring }	15.840		5.222		2.139	15.48	M
	"	Right image of right side of interior dark division . }	16.112		5.494		2.411	17.45	M
	"	Right image of right side of exterior dark division ... }	16.457		5.839		2.756	19.95	M
	"	Right image of right side of exterior edge of outer ring }	16.719		6.101		3.018	21.85	M
1853. Jan. 3. 7	Left image of right side of exterior ring.	Right image of left side of exterior edge of outer ring }	16.653		6.035	3.020	3.015	21.83	M
	"	Right image of outer edge of dark division (left) ... }	16.587		5.969		2.949	21.35	M
	"	Right image of inner edge of dark division (left) ... }	16.239		5.621		2.601	18.83	M
	"	Right image of interior edge of inner ring (left)..... }	15.791		5.173		2.153	15.59	M
	"	Right image of left limb of ball..... }	14.889		4.271		1.251	9.06	M
	"	Right image of right limb of ball..... }	12.408		1.790		1.230	8.90	M
	"	Right image of right side of interior edge of inner ring }	11.649		1.031		1.989	14.40	M
	"	Right image of inner edge of dark division (right).. }	11.407		0.789		2.231	16.15	M
	"	Right image of outer edge of dark division (right) .. }	10.967		0.349		2.671	19.34	M
	"	Right image of right side of exterior edge of outer ring }	10.662						M

One revolution of the micrometer = $7''.239$.

Jan. 3. These observations are without doubt worthy of more confidence than those on December 30, the planet being seen with beautiful distinctness, and the eye of the observer being more cultivated. The effect of the dark interval near the outer edge of the exterior bright ring was shewn by the general want of brightness of the part, very near to the outer edge. The reading for "right image of right side of exterior edge of outer ring" corresponds to coincidence of images.

DIAMETERS OF THE RINGS OF SATURN — *continued.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1853. d. h. Jan. 3. 7	Right image of left side of exterior ring.	Left image of outer edge of dark division (left)..... }	r 10·233	r 10·618	r 0·385	r 3·020	r 2·635	" 19·07	M
	"	Left image of inner edge of dark division (left)..... }	10·023		0·595		2·425	17·56	M
	"	Left image of left side of interior edge of inner ring }	9·535		1·083		1·937	14·02	M
	"	Left image of left side of ball..... }	8·823		1·795		1·225	8·86	M
	"	Left image of right side of ball..... }	6·313		4·305		1·285	9·30	M
	"	Left image of inner edge of dark division (right).... }	5·111		5·507		2·487	18·00	M
	"	Left image of outer edge of dark division (right) }	4·776		5·842		2·822	20·43	M
Jan. 5. 9	Right image of left side of exterior ring.	Left image of right side of exterior edge of outer ring }	4·615		6·003	3·009	2·994	21·67	M
	"	Left image of outer edge of dark division (right) }	4·765		5·853		2·844	20·59	M
	"	Left image of inner edge of dark division (right) }	5·090		5·528		2·519	18·24	M
	"	Left image of right side of interior edge of inner ring }	5·485		5·133		2·124	15·38	M
	"	Left image of right side of ball..... }	6·398		4·220		1·211	8·77	M
	"	Left image of left side of ball..... }	8·749		1·869		1·140	8·25	M
	"	Left image of left side of interior edge of inner ring }	9·566		1·052		1·957	14·17	M
	"	Left image of inner edge of dark division (left) }	10·169		0·449		2·560	18·53	M
	"	Left image of outer edge of dark division (left) }	10·273		0·345		2·664	19·28	M
	"	Left image of left side of exterior edge of outer ring }	10·648						M
Jan. 6. 8½	Left image of right side of exterior ring.	Right image of left side of exterior edge of outer ring }	16·612		5·994	3·003	2·991	21·63	M
	"	Right image of outer edge of dark division (left) }	16·499		5·881		2·878	20·83	M

One revolution of the micrometer = 7"·239.

January 5. The reading for "left image of left side of exterior edge of outer ring" corresponds to coincidence of images.

DIAMETERS OF THE RINGS OF SATURN — *continued.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1853. d. h. Jan. 6. 8½	Left image of right side of exterior ring.	Right image of inner edge of dark division (left).... {	r 16·277	r 10·618	r 5·659	r 3·003	r 2·656	" 19·23	M
	"	Right image of left side of interior edge of inner ring }	15·721		5·103		2·100	15·20	M
	"	Right image of left limb of ball..... }	14·853		4·235		1·232	8·92	M
	"	Right image of right limb of ball }	12·340		1·722		1·281	9·27	M
	"	Right image of right side of interior edge of inner ring }	11·659		1·041		1·962	14·20	M
	"	Right image of inner edge of dark division (right)..... }	11·100		0·482		2·521	18·25	M
	"	Right image of outer edge of dark division (right) }	10·939		0·321		2·682	19·42	M
	"	Right image of right side of exterior edge of outer ring }	10·639						M
Jan. 7. 6½	Left image of right side of exterior ring.	Right image of left side of exterior edge of outer ring }	4·652		5·966	2·998	2·968	21·48	M
	"	Right image of outer edge of dark division (left) ... }	4·778		5·840		2·842	20·57	M
	"	Right image of inner edge of dark division (left) ... }	5·046		5·572		2·574	18·63	M
	"	Right image of left side of interior edge of inner ring }	5·613		5·005		2·007	14·53	M
	"	Right image of left limb of ball }	6·331		4·287		1·289	9·33	M
	"	Right image of right limb of ball }	8·852		1·766		1·232	8·92	M
	"	Right image of right side of interior edge of inner ring }	9·603		1·015		1·983	14·36	M
	"	Right image of inner edge of dark division (right) .. }	10·165		0·453		2·545	18·43	M
	"	Right image of outer edge of dark division (right) .. }	10·351		0·267		2·731	19·77	M
	"	Right image of right side of exterior edge of outer ring }	10·582						M
	Right image of left side of exterior ring.	Left image of right side of interior edge of outer ring }	16·649		6·031		3·033	21·96	M

One revolution of the micrometer = 7"·239.

Jan. 6 and 7. The readings for "right image of right side of exterior edge of outer ring," correspond to coincidence of images.

DIAMETERS OF THE RINGS OF SATURN — *continued.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1853. d. h. Jan. 7. 6½	Right image of left side of exterior ring.	Left image of right side of } interior edge of inner ring }	r 15·648	r 10·618	r 5·030	r 2·998	r 2·032	" 14·71	M
	"	Left image of right limb of } ball..... }	14·944		4·326		1·328	9·62	M
	"	Left image of left limb of } ball..... }	12·348		1·730		1·268	9·18	M
	"	Left image of left side of } interior edge of inner ring }	11·639		1·021		1·977	14·31	M
	"	Left image of left side of } exterior edge of outer ring }	10·585						M
Jan. 31. 7	Right image of left side of exterior ring.	Left image of right side of } exterior edge of outer ring }	4·853		5·765	2·855	2·910	21·07	M
	"	Left image of outer edge } (right) of black division . }	5·169		5·449		2·594	18·78	M
	"	Left image of inner edge } (right) of black division . }	5·397		5·221		2·366	17·13	M
	"	Left image of right side of } interior edge of inner ring }	5·822		4·796		1·941	14·05	M
	"	Left image of right limb of } ball..... }	6·583		4·035		1·180	8·55	M
	"	Left image of left limb of } ball..... }	9·025		1·593		1·262	9·13	M
	"	Left image of left side of } interior edge of inner ring }	9·660		0·958		1·897	13·73	M
	"	Left image of inner edge } (left) of dark division.... }	10·089		0·529		2·326	16·84	M
	"	Left image of outer edge } (left) of dark division ... }	10·402		0·216		2·639	19·10	M
	"	Left image of left side of } exterior edge of outer ring }	10·680						M
Feb. 19. 8	Left image of right side of exterior ring.	Right image of left side of } exterior edge of outer ring }	5·072		5·546	2·790	2·756	19·95	M
	"	Right image of left side of } the middle point of dark division..... }	5·371		5·247		2·457	17·78	M
	"	Right image of left side of } interior edge of inner ring }	5·920		4·698		1·908	13·81	M
	"	Right image of left limb of } ball..... }	6·670		3·948		1·158	8·39	M

One revolution of the micrometer = 7"·239.

Jan. 7 and 31. The readings for "left image of left side of exterior edge of outer ring," correspond to coincidence of images.

Jan. 31. The night cold, with a tendency to frost ; at intervals Saturn was seen with beautiful distinctness, and the eyepiece is so well constructed that when the images are well placed upon each other I believe the planet to be as well seen as with an undivided glass.

DIAMETERS OF THE RINGS OF SATURN—*concluded.*

Day and Hour of Observation.	Object of Reference.	Part brought into Contact with Object of Reference.	Micrometer Reading for Part brought into Contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1853. d. h. Feb. 19. 8	Left image of right side of exterior ring.	Right image of right limb of ball.....	9.164	10.618	1.454	2.790	1.336	9.67	M
"	"	Right image of right side of interior edge of inner ring	9.728		0.890		1.900	13.75	M
"	"	Right image of right side of the middle point of dark division.....	10.156		0.462		2.328	16.86	M
"	"	Right image of right side of exterior edge of outer ring	10.609						M

One revolution of the micrometer = $7''.239$.

Feb. 19. The reading for "right image of right side of exterior edge of outer ring," corresponds to coincidence of images.

SYNOPSIS OF PRECEDING RESULTS.

DAY of OBSERVATION.	DISTANCE OF ASSUMED CENTER FROM									
	EAST EDGE of					WEST EDGE of				
	Exterior Side of Outer Ring.	Exterior Side of Black Division.	Interior Side of Black Division.	Inner Limb of Inner Bright Ring.	Ball.	Ball.	Inner Limb of Inner Bright Ring.	Interior Side of Black Division.	Exterior Side of Black Division.	Exterior Side of Outer Ring.
1852. d. h.	"	"	"	"	"	"	"	"	"	"
December 30. 8	21.92	20.88	19.67	15.91	8.97	(11.07)	14.20	16.79	19.14	..
" " 8	..	19.22	17.36	13.91	7.78	8.50	15.48	17.45	19.95	21.85
1853.										
January 3. 7	21.83	21.35	18.83	15.59	9.06	8.90	14.40	16.15	19.34	..
" " 5. 9	..	19.07	17.56	14.02	8.86	9.30	..	18.00	20.43	..
" " 6. 8½	21.63	19.28	18.53	14.17	8.25	8.77	15.38	18.24	20.59	21.67
" " 7. 6½	21.48	20.83	19.23	15.20	8.92	9.27	14.20	18.25	19.42	..
" " 31. 7	..	20.57	18.63	14.53	9.33	8.92	14.36	18.43	19.77	..
" " 31. 7	..	..	..	14.31	9.18	9.62	14.71	..	..	21.96
" " 31. 7	..	19.10	16.84	13.73	9.13	8.55	14.05	17.13	18.78	21.07
February 19. 8	19.95	..	..	13.81	8.39	9.67	13.75	..	..	..
Means for 1853, January 11 .. }	21.36	20.04	18.33	14.52	8.79	9.06	14.50	17.56	19.68	21.64



R E S U L T S

OF THE

ASTRONOMICAL OBSERVATIONS

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1853.

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C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES,

FOR 1853, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1853,

WITH THE ANNUAL VARIATIONS :

(The North Polar Distances being corrected for Discordance of Direct and Reflexion-Observations, and for Flexure of Telescope of the Transit-Circle :)

ALSO,

NEW CONSTANTS FOR STARS INCLUDED IN THE CATALOGUE,

NOT OBSERVED IN PRECEDING YEARS.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, FOR JAN. 1, 1853, OF STARS
OBSERVED IN THE YEAR 1853; WITH THE ANNUAL VARIATIONS.

(The N. P. D.'s being corrected for Discordance of Direct and Reflexion-Observations, and for Flexure of Telescope of the Transit-Circle.)

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
1	α Andromedæ	11	0.64	^h 0. ^m 47.88	+ 3.084	10	2	^s 61. 43. 16.67	16.93	12	0.70	16.71	- 19.91
2	γ Pegasi	16	0.70	0. 5. 40.24	3.082	12		75. 38. 2.44		12	0.81	2.44	20.04
3	W. B. O. 97	3	0.82	0. 6. 10.75	3.075	3		83. 52. 41.79		3	0.82	41.79	20.05
4	*	1	0.88	0. 8. 10.49	3.061	1		101. 51. 1.23		1	0.88	1.23	20.04
5	Lalande 390.....	4	0.81	0. 13. 32.50	3.066	4		93. 43. 34.10		4	0.81	34.10	20.02
6	12 Ceti.....	6	0.79	0. 22. 32.20	3.063	7		94. 46. 13.20		7	0.81	13.20	19.95
7	13 Ceti.....	3	0.79	0. 27. 40.96	3.085	3		94. 24. 9.24		3	0.79	9.24	19.88
8	B. A. C. 146.....	1	0.84	0. 27. 58.93	3.294	1		36. 38. 32.84		1	0.84	32.84	19.95
9	Oeltz. Arg. 547	1	0.88	0. 29. 18.88	3.310	1		35. 35. 4.99		1	0.88	4.99	19.89
10	ϵ Andromedæ.....	2	0.77	0. 30. 47.67	3.154	8	5	61. 29. 14.09	13.63	13	0.83	13.91	19.67
11	α Cassiopeiæ	2	0.58	0. 32. 11.42	3.352	3		34. 16. 10.37		4	0.70	10.77	19.82
	α Cassiopeiæ S.P....					1		12.55					
12	W. B. O. 551	3	0.79	0. 32. 32.82	3.042	3		98. 40. 49.63		3	0.79	49.63	19.85
13	β Ceti.....	8	0.77	0. 36. 12.55	3.013	3		108. 47. 40.05		3	0.84	40.05	19.83
14	δ Piscium	4	0.80	0. 41. 3.50	3.107	3		83. 12. 58.41		3	0.84	58.41	19.73
15	20 Ceti	4	0.80	0. 45. 29.82	3.064	3		91. 56. 37.85		3	0.84	37.85	19.67
16	μ Andromedæ	3	0.93	0. 48. 36.54	3.302			52. 18.....					
17	70 Piscium.....	1	0.91	0. 54. 28.35	3.112			82. 51.....					
18	ϵ Piscium	9	0.88	0. 55. 19.08	3.114	3		82. 54. 8.39		3	0.84	8.39	19.50
19	e Piscium	2	0.92	1. 0. 48.00	3.083			85. 8.....					
20	β Andromedæ	1	0.81	1. 1. 31.11	3.336	1		55. 9. 36.65		1	0.81	36.65	19.27
21	α Ursæ Minoris....			1. 5. (30)		2		1. 28. 42.36		2	0.80	42.36	19.24
22	Polaris	76	0.61	1. 5. 54.65	17.942	51	9	1. 28. 26.81	27.26	119	0.48	27.18	19.25
	Polaris S.P.....					55	4	27.54	26.63				
23	38 Ceti.....	2	0.87	1. 7. 18.92	3.056	2		91. 45. 40.49		2	0.87	40.49	19.41
24	40 Ceti.....	2	0.92	1. 9. 27.60	3.066			93. 3.....					
25	f Piscium.....	2	0.87	1. 10. 13.10	3.090	2		87. 9. 38.08		2	0.87	38.08	19.12
26	42 Ceti.....	3	0.82	1. 12. 17.47	3.065	2		91. 16. 56.20		2	0.83	56.20	19.09
27	θ Ceti	14	0.73	1. 16. 40.58	3.000	8		98. 56. 35.70		8	0.84	35.70	18.74
28	μ Piscium.....	1	0.79	1. 22. 29.18	3.137	1		84. 36. 55.31		1	0.79	55.31	18.60
29	η Piscium	7	0.89	1. 23. 37.39	3.200	5	2	75. 24. 49.01	48.92	7	0.88	48.98	18.76
30	B. A. C. 482.....	2	0.88	1. 28. 33.29	3.851	2		32. 46. 25.33		2	0.89	25.33	18.58
31	π Piscium.....	2	0.92	1. 29. 18.68	3.171			78. 37.....					
32	ν Piscium	9	0.92	1. 33. 47.10	3.117	3		85. 15. 28.58		3	0.85	28.58	18.38
33	B. A. C. 527.....	1	0.88	1. 35. 30.10	2.747	1		123. 4. 12.92		1	0.88	12.92	18.36
34	ϕ Piscium	5	0.90	1. 37. 38.17	3.162	2		81. 35. 3.51		2	0.99	3.51	18.31
35	B. A. C. 542.....	4	0.84	1. 39. 21.45	3.171	4		79. 53. 32.26		4	0.84	32.26	18.15
36	W. B. I. 743	2	0.84	1. 41. 25.63	3.157	2		81. 27. 28.64		2	0.84	28.64	18.12
37	54 Ceti.....	6	0.87	1. 43. 4.22	3.171	6		79. 41. 12.48		6	0.89	12.48	18.00
38	α Trianguli	1	0.02	1. 44. 42.72	3.399	1		61. 8. 21.62		1	0.02	21.62	17.80
39	β Arietis.....	9	0.82	1. 46. 31.71	3.297	3		69. 54. 46.22		3	0.66	46.22	17.82
40	*	1	0.88	1. 54. 1.38	3.104	1		87. 1. 41.17		1	0.88	41.17	17.62
41	α Piscium.....	1	0.79	1. 54. 26.56	3.102	1		87. 56. 54.03		1	0.79	54.03	17.62
42	W. B. I. 990.....	3	0.81	1. 55. 24.62	3.036	3		93. 5. 13.12		3	0.81	13.12	17.57
43	α Arietis.....	26	0.61	1. 58. 53.75	3.363	14	1	67. 14. 6.41	7.69	15	0.62	6.50	17.28
44	β Trianguli	1	0.01	2. 0. 48.66	3.545	1		55. 42. 36.60		1	0.01	36.60	17.32
45	*	1	0.84	2. 4. 20.95	3.118	1		86. 6. 12.43		1	0.84	12.43	17.18
46	ξ Ceti	4	0.84	2. 5. 12.73	3.169	3		81. 50. 41.72		3	0.83	41.72	17.12
47	67 Ceti.....	6	0.92	2. 9. 39.15	2.988	3		97. 6. 6.45		3	0.91	6.45	16.82
48	W. B. II. 158.....	2	0.79	2. 10. 54.73	+ 3.166	2		82. 30. 2.65		2	0.79	2.65	- 16.87

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued*.

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
49	69 Ceti.....	4	0·91	2. 14. 24·89	+ 3·070	4		90. 16. 42·14	"	4	0·91	42·14	- 16·64
50	ξ Arietis.....	4	0·61	2. 16. 56·58	3·205	3		80. 3. 27·82		3	0·60	27·82	16·54
51	ξ Ceti.....	8	0·80	2. 20. 20·89	3·182	7		82. 12. 5·69		7	0·70	5·69	16·41
52	Lalande 4594.....	2	0·89	2. 21. 51·08	3·624	2		54. 32. 21·11		2	0·89	21·11	16·34
53	14 Trianguli.....	3	0·88	2. 23. 8·74	3·627	3		54. 30. 28·09		3	0·88	28·09	16·26
54	W. B. II. 417.....	1	0·01	2. 25. 11·49	3·171	1		82. 45. 50·27		1	0·01	50·27	16·16
55	*	1	0·01	2. 27. 14·71	3·256	1		76. 58. 38·77		1	0·01	38·77	16·06
56	B. A. C. 789.....	1	0·70	2. 27. 17·35	3·168	1		83. 10. 18·36		1	0·70	18·36	15·94
57	*	1	0·01	2. 27. 22·12	3·256	1		77. 2. 28·77		1	0·01	28·77	16·05
58	35 Arietis.....	1	0·01	2. 34. 50·18	3·499	2		62. 55. 17·97		2	0·02	17·97	15·68
59	γ Ceti.....	15	0·63	2. 35. 41·27	3·101	6		87. 23. 10·92		6	0·83	10·92	15·43
60	B. A. C. 845.....	2	0·72	2. 37. 0·01	3·232	1		80. 30. 36·52		1	0·79	36·52	15·49
61	π Arietis.....	2	0·64	2. 41. 5·72	3·335	2		73. 9. 0·89		2	0·64	0·89	15·35
62	41 Arietis.....	1	0·01	2. 41. 20·51	3·510	1		63. 20. 56·01		1	0·01	56·01	15·20
63	σ Arietis.....	4	0·99	2. 43. 22·92	3·299	2		75. 31. 36·70		2	0·98	36·70	15·15
64	B. A. C. 892.....	1	0·89	2. 45. 0·93	3·329	1		74. 7. 5·72		1	0·89	5·72	15·02
65	B. A. C. 905.....	1	0·89	2. 48. 22·22	3·201	1		82. 12. 46·64		1	0·89	46·64	14·85
66	ε Arietis.....	6	0·99	2. 50. 48·85	3·418	3		69. 15. 2·91		3	0·99	2·91	14·75
67	γ Persei.....	1	0·01	2. 54. 10·53	4·298	1		37. 4. 23·07		1	0·01	23·07	14·55
68	α Ceti.....	20	0·46	2. 54. 35·96	3·127	13		86. 29. 24·01		13	0·34	24·01	14·40
69	τ ³ Eridani.....	1	0·05	2. 55. 54·72	2·643	1		114. 12. 12·27		1	0·05	12·27	14·36
70	*	3	0·02	3. 1. 12·18	2·667	3		113. 1. 17·91		3	0·02	17·91	14·11
71	δ Arietis.....	6	0·94	3. 3. 13·80	3·418	4		70. 49. 58·32		4	0·92	58·32	14·00
72	94 Ceti.....	1	0·70	3. 5. 16·41	3·058	1		91. 44. 55·56		1	0·70	55·56	13·78
73	*	1	0·72	3. 5. 51·15	3·041	1		91. 48. 7·80		1	0·72	7·80	13·81
74	ζ Arietis.....	5	0·92	3. 6. 27·53	3·434	3		69. 30. 13·53		3	0·87	13·53	13·73
75	*	1	0·04	3. 6. 41·52	3·409	1		70. 50. 41·88		1	0·03	41·88	13·76
76	B. A. C. 1010.....	1	0·68	3. 8. 23·14	2·915	1		99. 19. 3·72		1	0·68	3·72	13·57
77	Lalande 6129.....	3	0·02	3. 11. 41·27	3·374	3		73. 2. 17·72		3	0·02	17·72	13·44
78	Rümker 842.....	4	0·88	3. 12. 18·05	3·353	4		74. 12. 10·51		4	0·88	10·51	13·40
79	τ ¹ Arietis.....	1	0·64	3. 12. 44·85	3·449	1		69. 23. 9·74		1	0·64	9·74	13·33
80	α Persei.....	7	0·37	3. 13. 51·01	4·240	6		40. 39. 59·31		7	0·37	59·15	13·25
	α Persei S.P.....					1		57·25					
81	*	1	0·01	3. 15. 34·01	4·241	1		40. 43. 25·81		1	0·01	25·81	13·19
82	Groombridge 660 ..	2	0·07	3. 15. 36·13	4·241	2		40. 46. 42·45		2	0·01	42·45	13·19
83	64 Arietis.....	4	0·99	3. 15. 38·12	3·525	3		65. 48. 2·02		3	0·99	2·02	13·13
84	ο Tauri.....	6	0·54	3. 16. 54·44	3·222	4		81. 29. 30·92		4	0·58	30·92	13·05
85	ξ Tauri.....	9	0·56	3. 19. 12·41	3·243	7		80. 46. 59·33		7	0·44	59·33	12·92
86	Lalande 6361.....	6	0·88	3. 19. 21·18	3·367	6		73. 51. 13·44		6	0·88	13·44	12·94
87	δ Tauri.....	1	0·05	3. 22. 22·75	3·272	2	1	79. 10. 18·42	17·04	3	0·07	17·96	12·70
88	f Tauri.....	6	0·97	3. 22. 45·78	3·304	2		77. 34. 14·03		2	0·99	14·03	12·72
89	*	2	0·01	3. 23. 54·06	2·914	2		98. 36. 53·51		2	0·01	53·51	12·63
90	t Tauri.....	1	0·70	3. 24. 38·98	3·238	1		81. 7. 36·36		1	0·70	36·36	12·54
91	ε Eridani.....	1	0·05	3. 26. 0·34	2·826	1		99. 57. 32·64		1	0·05	32·64	12·43
92	11 Tauri.....	5	0·99	3. 31. 59·98	3·568	3		65. 8. 59·90		3	0·99	59·90	12·03
93	12 Tauri.....	1	0·71	3. 32. 11·85	3·117	1		87. 25. 28·77		1	0·71	28·77	12·08
94	ο Persei.....	1	0·04	3. 35. 6·63	3·733	5	4	58. 10. 53·63	53·87	9	0·01	53·74	11·89
95	W. B. III. 680.....	1	0·05	3. 35. 45·67	2·861	1		100. 58. 40·05		1	0·05	40·05	11·81
96	17 Tauri.....	5	0·67	3. 36. 9·19	+ 3·548	3		66. 21. 10·29		3	0·50	10·29	- 11·76

78. Of the 9-10th magnitude.

86. Of the 8-9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
97	γ Tauri.....	23	0.62	^h 3. 38. 45 ^m 19 ^s	+ 3.553	16		66. 21. 12 ^h 71 ^m	"	16	0.55	12.71	— 11.54
98	ϵ Tauri.....	2	0.03	3. 40. 12.87	3.279	2		79. 18. 46.55		2	0.03	46.55	11.45
99	{ Piazzi III. 170 } { B. A. C. 1192.. }	2	0.91	3. 41. 29.12	3.601			64. 52.....					
100	32 Tauri.....	3	0.06	3. 48. 11.31	3.531	3		67. 56. 58.69		3	0.06	58.69	10.78
101	γ Eridani.....	18	0.49	3. 51. 10.35	2.796	9		103. 55. 47.79		9	0.18	47.79	10.59
102	λ Tauri.....	3	0.65	3. 52. 32.43	3.315	1		77. 55. 42.97		1	0.13	42.97	10.61
103	{ Piazzi III. 254. } { B. A. C. 1275.. }	2	0.91	4. 0. 49.31	3.349			77. 0.....					
104	δ Eridani.....	1	0.02	4. 4. 41.56	2.922	1		97. 13. 27.88		1	0.02	27.88	9.74
105	σ^2 Eridani.....			4. 8. (30)		1		97. 53. 5.97		1	0.02	5.97	5.94
106	W. B. IV. 124.....	3	0.01	4. 7. 6.57	3.133	3		87. 0. 22.66		3	0.01	22.66	9.48
107	W. B. IV. 180.....	2	0.01	4. 9. 38.57	3.116	2		87. 50. 11.19		2	0.01	11.19	9.29
108	γ Tauri.....	3	0.90	4. 11. 25.91	3.407	1		74. 43. 52.95		1	0.87	52.95	9.14
109	δ^1 Tauri.....			4. 14. (30)		1		72. 48. 23.67		1	0.02	23.67	8.91
110	δ^2 Tauri.....	1	0.87	4. 15. 37.54	3.451	1		72. 54. 2.74		1	0.87	2.74	8.83
111	ϵ Tauri.....	10	0.49	4. 20. 2.25	3.494	7		71. 9. 0.54		7	0.25	0.54	8.47
112	θ^3 Tauri.....	2	0.01	4. 20. 16.38	3.420	2		74. 27. 33.84		2	0.01	33.84	8.46
113	B. A. C. 1408.....	1	0.10	4. 25. 26.66	3.750	1		61. 21. 3.28		1	0.10	3.28	7.97
114	Aldebaran.....	26	0.45	4. 27. 29.41	3.434	17		73. 47. 26.02		17	0.37	26.02	7.71
115	ν Eridani.....	2	0.07	4. 28. 58.62	2.994	2		93. 39. 23.96		2	0.07	23.96	7.77
116	ν^1 Eridani.....	1	0.08	4. 29. 50.23	2.333	1		120. 52. 1.62		1	0.08	1.62	7.67
117	σ^2 Tauri.....	3	0.05	4. 31. 52.59	3.336	3		78. 5. 43.07		3	0.05	43.07	7.57
118	τ Tauri.....	1	0.13	4. 33. 25.65	3.592	1		67. 19. 46.34		1	0.13	46.34	7.41
119	*	1	0.83	4. 37. 27.06	3.422	1		74. 20. 39.84		1	0.83	39.84	7.07
120	9 Camelopardali....	2	0.01	4. 39. 27.16	5.908	8	6	23. 54. 52.98	53.15	14	0.04	53.01	6.95
121	ι Aurigæ.....	7	0.04	4. 47. 25.59	3.895	10	2	57. 4. 17.84	18.79	12	0.09	18.00	6.25
122	ι Tauri.....	2	0.46	4. 54. 18.71	3.581	2		68. 37. 29.12		2	0.46	29.12	5.65
123	B. A. C. 1565.....			4. 58. (20)		1	1	10. 57. 3.00	1.89	2	0.03	2.45	5.42
124	m Tauri.....	1	0.02	4. 58. 45.82	3.546	2	1	71. 33. 24.91	25.95	3	0.06	25.26	5.34
125	l Tauri.....	4	0.10	4. 59. 6.61	3.547	4		69. 46. 48.53		4	0.08	48.53	5.23
126	ϵ Leporis.....	5	0.21	4. 59. 14.42	2.538	4		112. 34. 18.01		4	0.04	18.01	5.22
127	15 Orionis.....	1	0.05	5. 1. 17.26	3.430	1		74. 35. 42.30		1	0.05	42.30	5.12
128	λ Eridani.....	4	0.09	5. 2. 6.84	2.872	4		98. 56. 46.47		4	0.09	46.47	5.00
129	Capella.....	4	0.05	5. 5. 50.23	4.419	4		44. 9. 26.13		4	0.05	26.13	4.27
130	*	2	0.09	5. 7. 28.38	2.879	3		98. 22. 39.87		3	0.08	39.87	4.56
131	Rigel.....	14	0.27	5. 7. 28.50	2.880	10		98. 22. 30.97		10	0.21	30.97	4.55
132	n Tauri.....	1	0.88	5. 10. 26.75	3.602	1		68. 3. 36.84		1	0.88	36.84	4.37
133	*	2	0.02	5. 10. 28.43	3.666	2		65. 30. 39.59		2	0.01	39.59	4.30
134	*	2	0.11	5. 10. 40.46	3.711	2		63. 53. 58.65		2	0.11	58.65	4.28
135	B. A. C. 1648.....	2	0.05	5. 11. 45.70	3.761	2		62. 11. 48.89		2	0.05	48.89	4.15
136	λ Leporis.....	2	0.13	5. 12. 48.31	2.764	2		103. 19. 55.12		2	0.13	55.12	4.09
137	Lalande 10056.....	2	0.01	5. 14. 59.70	3.677	2		65. 10. 57.18		2	0.01	57.18	3.91
138	β Tauri.....	15	0.46	5. 17. 0.18	3.789	15	2	61. 31. 18.36	18.30	17	0.22	18.35	3.54
139	γ Orionis.....	1	0.02	5. 17. 15.02	3.220	1		83. 47. 16.89		1	0.02	16.89	3.72
140	o Tauri.....	1	0.13	5. 18. 48.57	3.602	1		68. 11. 30.04		1	0.13	30.04	3.63
141	B. A. C. 1706.....	2	0.03	5. 20. 5.95	8.004	3	2	15. 3. 51.76	52.12	5	0.07	51.90	3.47
142	118 Tauri (1st Star)	2	0.09	5. 20. 13.68	3.690	2		64. 58. 30.45		2	0.09	30.45	3.41
143	118 Tauri (2nd Star)	2	0.09	5. 20. 13.90	3.690	2		64. 58. 24.99		2	0.09	24.99	3.41
144	*	1	0.08	5. 21. 54.16	+ 3.728	1		63. 32. 4.69		1	0.08	4.69	— 3.32

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N.P.D.
						D.	R.	D.	R.				
145	β Leporis.....	1	0.15	^h 5. 21. 56.93	+ 2.572	1		^s 110. 52. 48.80	"	1	0.15	48.80	- 3.25
146	δ Orionis	13	0.54	5. 24. 29.86	3.066	4		90. 24. 43.48		4	0.06	43.48	3.05
147	*	1	0.08	5. 25. 41.60	3.732	1		63. 25. 56.76		1	0.08	56.76	2.99
148	α Leporis.....	10	0.51	5. 26. 14.90	2.648	5		107. 55. 52.37		5	0.06	52.37	2.95
149	W. B. V. 658.....	2	0.02	5. 26. 57.84	3.068	2		90. 6. 59.70		2	0.02	59.70	2.88
150	B. A. C. 1754.....	2	0.09	5. 27. 58.15	3.751	2		63. 10. 20.49		2	0.09	20.49	2.86
151	ϵ Orionis	1	0.73	5. 28. 14.61	2.936	1		96. 0. 37.37		1	0.73	37.37	2.77
152	ϵ Orionis	11	0.57	5. 28. 45.35	3.044	6		91. 18. 0.20		6	0.23	0.20	2.71
153	ζ Tauri	1	0.73	5. 28. 51.63	3.585	1		68. 57. 7.56		1	0.73	7.56	2.71
154	*	2	0.06	5. 29. 47.79	3.733	2		63. 28. 22.70		2	0.06	22.70	2.63
155	d Orionis	4	0.98	5. 31. 46.35	2.902			97. 18.					
156	Lalande 10669.....	5	0.04	5. 32. 27.35	3.734	5		63. 27. 58.01		5	0.04	58.01	2.40
157	ζ Orionis.....	1	0.09	5. 33. 20.52	3.030	1		92. 1. 27.28		1	0.09	27.28	2.33
158	α Columbæ	2	0.04	5. 34. 19.73	2.177	2		124. 9. 19.25		2	0.04	19.25	2.24
159	129 Tauri.....	4	0.99	5. 38. 18.31	3.451	1		74. 14. 23.24		1	0.98	23.24	1.93
160	132 Tauri.....	2	0.88	5. 39. 59.63	3.683	1		65. 29. 13.90		1	0.88	13.90	1.75
161	136 Tauri.....	6	0.95	5. 44. 5.34	3.771	3		62. 25. 40.13		3	0.91	40.13	1.35
162	*	3	0.04	5. 46. 29.89	3.735	3		63. 33. 9.62		3	0.04	9.62	1.18
163	B. A. C. 1879.....	1	0.08	5. 47. 7.12	26.931	2	1	3. 14. 27.62	27.84	3	0.04	27.69	1.01
164	α Orionis	10	0.55	5. 47. 12.90	3.247	8		82. 37. 29.38		8	0.31	29.38	1.12
165	δ Aurigæ.....	1	0.13	5. 47. 25.43	4.937	1		35. 44. 0.73		1	0.13	0.73	0.99
166	β Aurigæ	2	0.08	5. 48. 44.75	4.404	2		45. 4. 24.15		2	0.09	24.15	0.97
167	139 Tauri.....	2	0.12	5. 48. 52.42	3.725	2		64. 4. 9.52		2	0.12	9.52	0.99
168	θ Aurigæ	4	0.13	5. 49. 41.91	4.092	4		52. 48. 10.94		4	0.15	10.94	0.81
169	γ Geminorum.....	4	0.99	5. 55. 11.08	3.648	1		66. 44. 1.81		1	0.98	1.81	0.33
170	Rümker 1705.....	3	0.09	5. 57. 52.39	3.743	3		63. 19. 10.83		3	0.09	10.83	0.19
171	Rümker 1707.....	3	0.10	5. 58. 9.63	3.743	3		63. 18. 29.10		3	0.10	29.10	0.16
172	*	1	0.18	5. 59. 27.10	3.641	1		66. 54. 53.53		1	0.18	53.53	- 0.05
173	*	1	0.05	6. 0. 7.45	3.644	1		66. 47. 30.87		1	0.05	30.87	+ 0.01
174	η Geminorum.....	2	0.09	6. 6. 0.21	3.624	3	1	67. 27. 19.90	19.06	4	0.07	19.69	0.52
175	κ Aurigæ	2	0.12	6. 6. 0.60	3.828	2		60. 27. 9.74		2	0.12	9.74	0.80
176	Lalande 11854.....	3	0.12	6. 6. 20.05	3.705	3		64. 37. 39.25		3	0.12	39.25	0.55
177	Lalande 11946.....	4	0.18	6. 7. 49.96	3.709	4		64. 27. 39.95		4	0.18	39.95	0.69
178	Lalande { 11976. } { 11978. }	1	0.19	6. 9. 40.97	3.711	1		64. 25. 2.02		1	0.19	2.02	0.85
179	Lalande 11996.....	2	0.08	6. 10. 19.87	3.715	2		64. 15. 44.46		2	0.08	44.46	0.90
180	Lalande 12041.....	3	0.08	6. 11. 29.43	3.713	3		64. 19. 58.07		3	0.08	58.07	1.01
181	*	2	0.14	6. 11. 46.63	3.716	2		64. 14. 18.42		2	0.14	18.42	1.03
182	μ Geminorum.....	7	0.22	6. 14. 4.03	3.636	8	1	67. 24. 57.15	58.06	9	0.19	57.25	1.36
183	ζ Canis Majoris....	1	0.19	6. 14. 40.37	2.304	1		120. 0. 1.72		1	0.19	1.72	1.30
184	B. A. C. 2058.....	2	0.16	6. 15. 40.44	3.697	2		64. 52. 44.73		2	0.16	44.73	1.45
185	β Canis Majoris....	1	0.16	6. 16. 13.66	2.643	1		107. 53. 11.47		1	0.16	11.47	1.41
186	Lalande 12237.....	1	0.08	6. 17. 1.64	3.709	1		64. 24. 41.02		1	0.08	41.02	1.47
187	*	1	0.19	6. 20. 7.84	3.696	1		64. 51. 38.67		1	0.19	38.67	1.76
188	ν Geminorum.....	2	0.43	6. 20. 14.04	3.566	2		69. 41. 58.07		2	0.43	58.07	1.78
189	*	1	0.19	6. 21. 17.41	3.698	1		64. 45. 40.81		1	0.19	40.81	1.87
190	Lalande 12395.....	1	0.16	6. 21. 25.54	3.714	1		64. 13. 26.24		1	0.16	26.24	1.87
191	*	2	0.04	6. 21. 51.06	3.706	2		64. 28. 51.11		2	0.04	51.11	1.91
192	*	1	0.04	6. 27. 15.36	+ 3.997	1		55. 6. 51.44		1	0.04	51.44	+ 2.38

170. Of the 8th magnitude.

177. Of the 8-9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
193	Gr. (12 yr.) 576,577.	3	0.17	^h 6. 27. 34.57	+ 3.987	3		55. 21. 35.26	"	3	0.19	35.26	+ "
194	γ Geminorum	3	0.17	6. 29. 13.26	3.469	3		73. 28. 47.46		3	0.41	47.46	2.56
195	Gr. (12 yr.) 580 . . .	2	0.16	6. 29. 48.60	3.984	2		55. 26. 23.71		2	0.16	23.71	2.60
196	Cephei 51 (Hev.) . . .	2	0.40	6. 30. 5.80	30.668	5		2. 44. 45.10		12	0.41	45.60	2.73
	Cephei 51 (Hev.) S.P.					7		45.95					
197	ε Geminorum	2	0.88	6. 34. 53.21	3.700	1		64. 43. 43.31		1	0.88	43.31	3.05
198	Sirius	7	0.21	6. 38. 40.21	2.645	8		106. 31. 3.34		8	0.26	3.34	4.60
199	κ Canis Majoris	2	0.07	6. 44. 20.85	2.242	2		122. 20. 28.83		2	0.07	28.83	3.86
200	θ Canis Majoris	4	0.33	6. 47. 21.68	2.791	5		101. 51. 29.61		5	0.30	29.61	4.14
201	δ Canis Majoris	2	0.16	6. 48. 1.92	2.492	2		114. 0. 11.44		2	0.16	11.44	4.15
202	ι Canis Majoris	1	0.08	6. 49. 34.88	2.676	1		106. 52. 1.77		1	0.08	1.77	4.28
203	ε Canis Majoris	3	0.07	6. 52. 50.98	2.360	4		118. 46. 29.61		4	0.17	29.61	4.58
204	ζ Geminorum	3	0.89	6. 55. 23.32	3.567	2		69. 13. 7.84		2	0.84	7.84	4.80
205	22 Canis Majoris . . .	2	0.14	6. 55. 51.79	2.391	2		118. 44. 9.21		2	0.14	9.21	4.84
206	σ Canis Majoris	2	0.15	6. 56. 53.23	2.507	2		113. 37. 18.34		2	0.15	18.34	4.91
207	*	1	0.19	7. 2. 0.62	3.529	1		70. 27. 20.89		1	0.19	20.89	5.36
208	*	1	0.19	7. 2. 1.94	3.529	1		70. 26. 15.82		1	0.19	15.82	5.36
209	δ Canis Majoris	4	0.13	7. 2. 24.98	2.441	4		116. 9. 46.09		4	0.13	46.09	5.36
210	W. B. VII. 302	2	0.15	7. 10. 5.94	3.335	2		78. 18. 53.11		2	0.10	53.11	6.04
211	W. B. VII. 306	1	0.16	7. 10. 16.22	3.335	1		78. 13. 10.09		1	0.16	10.09	6.05
212	δ Geminorum	10	0.32	7. 11. 20.46	3.596	9		67. 45. 6.10		9	0.33	6.10	6.16
213	ι Geminorum	1	0.13	7. 16. 35.55	3.742	1		61. 54. 51.67		1	0.13	51.67	6.65
214	β Canis Minoris	8	0.17	7. 19. 10.59	3.261	8		81. 25. 6.14		8	0.17	6.14	6.83
215	Castor	4	0.20	7. 25. 12.86	3.841	6	2	57. 47. 38.50	38.57	8	0.31	38.52	7.36
216	Procyon	7	0.22	7. 31. 36.36	3.146	1		84. 24. 6.75		1	0.19	6.75	8.85
217	Pollux	12	0.24	7. 36. 18.90	3.683	8		61. 37. 22.64		8	0.26	22.64	8.24
218	B. A. C. 2599	1	0.19	7. 42. 51.44	2.521	1		114. 32. 51.70		1	0.19	51.70	8.41
219	ξ Navis	2	0.16	7. 43. 6.64	2.527	2		114. 29. 39.43		2	0.16	39.43	8.70
220	φ Geminorum	3	0.63	7. 44. 29.75	3.688	3		62. 51. 29.52		3	0.63	29.52	8.86
221	*	1	0.13	7. 45. 11.93	3.400	1		73. 25. 17.82		1	0.13	17.82	8.88
222	6 Cancri	6	0.26	7. 54. 29.04	3.702	9	3	61. 47. 51.66	52.13	12	0.21	51.78	9.67
223	B. A. C. 2703	3	0.18	7. 57. 53.37	3.550	3		67. 7. 30.21		3	0.18	30.21	9.93
224	15 Argus	4	0.19	8. 1. 17.08	2.558	4		113. 52. 59.41		4	0.19	59.41	10.05
225	ψ Cancri	2	0.11	8. 1. 35.61	3.630	2		64. 3. 2.70		2	0.16	2.70	10.48
226	β Cancri	7	0.28	8. 8. 32.44	3.263	7		80. 21. 54.36		7	0.28	54.36	10.73
227	θ Cancri	1	0.88	8. 23. 12.51	3.435	1		71. 24. 45.40		1	0.88	45.40	11.78
228	η Cancri	6	0.19	8. 24. 12.13	3.486	8	2	69. 3. 47.50	47.11	10	0.19	47.42	11.83
229	39 Cancri	1	0.21	8. 31. 38.91	3.463	1		69. 28. 37.76		1	0.21	37.76	12.34
230	γ Cancri	11	0.31	8. 34. 46.33	3.488	11		68. 0. 23.64		11	0.31	23.64	12.51
231	δ Cancri	2	0.18	8. 36. 19.52	3.425			71. 19.					
232	ε Hydræ	16	0.24	8. 38. 59.28	3.189	13		83. 2. 42.35		13	0.24	42.35	12.86
233	Lalande 17513	4	0.21	8. 45. 31.38	3.494	4		67. 8. 34.28		4	0.21	34.28	13.26
234	Lalande 17528	3	0.19	8. 45. 48.38	3.492	3		67. 13. 37.76		3	0.19	37.76	13.28
235	ι Ursæ Majoris	5	0.24	8. 49. 7.29	4.148	5		41. 23. 5.46		5	0.24	5.46	13.78
236	α Cancri	6	0.40	8. 50. 26.59	3.293	6		77. 34. 34.42		6	0.28	34.42	13.61
237	ν Cancri	6	0.31	8. 54. 8.14	3.525	6		64. 58. 19.18		6	0.31	19.18	13.88
238	Lalande 17818	4	0.21	8. 54. 17.57	3.464	4		67. 54. 20.84		4	0.21	20.84	13.82
239	κ Cancri	11	0.27	8. 59. 46.89	3.262	10		78. 44. 35.76		10	0.26	35.76	14.14
240	*	1	0.19	9. 4. 7.05	3.395	1		70. 43. 34.31		1	0.19	34.31	14.43
241	83 Cancri	7	0.29	9. 10. 46.28	+ 3.361	13	7	71. 40. 27.54	26.89	20	0.24	27.31	+ 14.99

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued*.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
242	<i>h</i> Ursæ Majoris	1	0·24	^h 19. 53·40	+4·830	5	4	^o 26. 17. 57·53	57·80	9	0·28	57·65	+15·31
243	<i>α</i> Hydræ	10	0·30	9. 20. 21·83	2·948	6		98. 1. 25·71		6	0·29	25·71	15·34
244	*	2	0·26	9. 21. 37·30	3·474	2		64. 40. 46·24		2	0·26	46·24	15·45
245	<i>θ</i> Ursæ Majoris	2	0·25	9. 23. 0·21	4·061	2		37. 39. 21·12		2	0·25	21·12	16·10
246	*	3	0·24	9. 23. 2·62	3·467	3		64. 56. 29·31		3	0·23	29·31	15·53
247	<i>γ</i> Leonis	7	0·20	9. 29. 24·72	3·453	6		64. 40. 18·48		6	0·19	18·48	15·94
248	<i>ε</i> Leonis	8	0·21	9. 33. 18·00	3·228	7		79. 26. 29·10		7	0·21	29·10	16·14
249	<i>ε</i> Leonis	13	0·26	9. 37. 30·02	3·425	10		65. 33. 4·98		10	0·26	4·98	16·34
250	<i>μ</i> Leonis	11	0·24	9. 44. 23·68	3·427	8	1	63. 18. 11·03	11·56	9	0·24	11·09	16·71
251	<i>ν</i> Leonis	1	0·07	9. 50. 18·58	3·240	1		76. 51. 23·97		1	0·07	23·97	16·94
252	<i>π</i> Leonis	9	0·23	9. 52. 26·49	3·182	9		81. 15. 9·46		9	0·30	9·46	17·06
253	Regulus	23	0·33	10. 0. 32·35	3·203	14		77. 18. 58·74		14	0·40	58·74	17·38
254	34 Leonis	6	0·21	10. 3. 43·62	3·242	6		75. 55. 16·15		6	0·21	16·15	17·64
255	<i>γ</i> Leonis	8	0·33	10. 11. 51·74	3·322	10	1	69. 25. 0·88	0·76	11	0·37	0·87	18·02
256	42 Leonis	6	0·21	10. 13. 55·74	3·237	6		74. 17. 5·87		6	0·21	5·87	17·96
257	B. A. C. 3579	7	0·21	10. 20. 56·75	3·221	6		74. 54. 24·86		6	0·21	24·86	18·26
258	<i>ρ</i> Leonis	11	0·34	10. 25. 4·13	3·171	10		79. 56. 19·42		10	0·36	19·42	18·40
259	33 Sextantis	1	0·37	10. 33. 55·40	3·057	1		90. 58. 13·60		1	0·87	13·60	18·79
260	34 Sextantis	11	0·31	10. 35. 1·91	3·105	11		85. 39. 0·80		11	0·30	0·80	18·70
261	<i>ι</i> Leonis	9	0·38	10. 41. 31·62	3·163	11	3	78. 40. 42·20	42·72	14	0·29	42·31	18·88
262	<i>δ</i> Leonis	7	0·42	10. 52. 58·00	3·104	8		85. 35. 39·43		8	0·33	39·43	19·25
263	<i>α</i> Ursæ Majoris	1	0·25	10. 54. 37·20	3·777	7	6	27. 27. 23·51	23·20	13	0·26	23·37	19·33
264	<i>χ</i> Leonis	7	0·34	10. 57. 25·96	3·103	7		81. 52. 12·70		7	0·34	12·70	19·39
265	<i>δ</i> Leonis	8	0·32	11. 6. 17·09	3·207	7	1	68. 40. 18·51	17·28	8	0·50	18·36	19·64
266	<i>θ</i> Leonis	4	0·26	11. 6. 31·30	3·161	4		73. 46. 4·51		4	0·26	4·51	19·54
267	<i>δ</i> Crateris	6	0·30	11. 11. 59·68	2·995	7		103. 59. 0·73		7	0·37	0·73	19·41
268	<i>σ</i> Leonis	1	0·33	11. 13. 33·34	3·099	1		83. 9. 56·60		1	0·33	56·60	19·66
269	<i>ι</i> Leonis	3	0·30	11. 16. 15·52	3·137	3		78. 39. 42·26		3	0·30	42·26	19·75
270	<i>τ</i> Leonis	6	0·39	11. 20. 22·64	3·091	7		86. 20. 4·98		7	0·38	84·9	19·78
271	{20 Crateris}	3	0·28	11. 27. 21·30	2·896	2		122. 3. 4·41		2	0·28	4·41	19·03
272	{B. A. C. 3934}	4	0·64	11. 29. 25·30	3·074	6		90. 0. 45·37		6	0·53	45·37	19·87
273	*	1	0·32	11. 29. 49·54	3·057	1		94. 35. 41·59		1	0·32	41·59	19·88
274	<i>ν</i> Virginis	1	0·25	11. 38. 18·00	3·093	1		82. 38. 48·20		1	0·23	48·20	20·16
275	<i>β</i> Leonis	13	0·99	11. 41. 33·52	3·066	12		74. 36. 23·44		12	0·55	23·44	20·08
276	{Groombridge 1830}	2	0·32	11. 44. 29·59	3·488	4		51. 13. 39·01		4	0·33	39·01	25·71
277	{B. A. C. 4010}	2	0·54	11. 46. 4·61	3·197	1		35. 29. 16·18		1	0·36	16·18	20·03
278	<i>γ</i> Ursæ Majoris	2	0·18	11. 51. 10·13	3·113	2		51. 18. 19·43		2	0·33	19·43	20·04
279	Lalande 22547	5	0·61	11. 53. 20·37	3·079	7		82. 33. 57·01		7	0·33	57·01	20·10
280	<i>π</i> Virginis	1	0·23	11. 57. 43·15	3·064	1		80. 26. 59·92		1	0·23	59·92	20·05
281	<i>ε</i> Virginis	5	0·28	12. 2. 9·38	3·074	5		87. 16. 35·33		5	0·28	35·33	20·28
282	<i>ε</i> Corvi	4	0·36	12. 2. 34·25	3·077	5		111. 48. 6·75		5	0·36	6·75	20·03
283	*	1	0·19	12. 3. 22·86	3·074	1		99. 33. 25·82		1	0·19	25·82	20·05
284	<i>η</i> Virginis	10	0·55	12. 12. 23·13	3·067	12		89. 50. 58·18		12	0·49	58·18	20·07
285	B. A. C. 4205			12. 21. (20)		1	1	62. 57. 32·19	33·43	2	0·21	32·81	19·97
286	<i>δ</i> Corvi	6	0·21	12. 22. 15·84	3·106	7		105. 41. 47·05		7	0·30	47·05	20·12
287	<i>β</i> Corvi	6	0·28	12. 26. 40·47	+3·131	5		112. 34. 59·26		5	0·42	59·26	19·99
288	<i>κ</i> Draconis			12. 27. (10)		6	6	19. 24. 3·31	3·52	12	0·34	3·42	+19·96

244. Of the 8-9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N.P.D.		Mean N.P.D. 1853 Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N.P.D.
						D.	R.	D.	R.				
289	γ Virginis (S. star) .	1	0.23	^h 12. ^m 34. ^s 12.69	+ 3.040	3		^o 38. ['] 34. ["] 04	"	3	0.32	34.04	+ 19.85
290	γ Virginis (as one mass)	4	0.36	12. 34. 12.85	3.040	1		38. 31.62		1	0.23	31.62	19.85
291	γ Virginis (N. star) .	2	0.36	12. 34. 12.80	3.040	2		38. 31.64		2	0.36	31.64	19.85
292	37 Virginis	8	0.33	12. 44. 8.00	3.055	8		86. 8. 34.94		8	0.31	34.94	19.67
293	38 Virginis	2	0.37	12. 45. 39.72	3.072			92. 45.					
294	δ Virginis	8	0.36	12. 48. 11.98	3.023	6		85. 48. 9.50		6	0.33	9.50	19.71
295	12 Can. Venat. (1 st star)	1	0.36	12. 49. 7.31	2.820	1		50. 53. 25.91		1	0.36	25.91	19.54
296	12 Can. Venat. (2 ^d star)	2	0.36	12. 49. 8.64	2.820	2		50. 53. 11.43		2	0.36	11.43	19.54
297	B. A. C. 4355	1	0.32	12. 52. 30.40	3.266	1		122. 42. 28.18		1	0.32	28.18	19.55
298	g Virginis	2	0.37	13. 0. 12.00	3.137			99. 57.					
299	θ Virginis	10	0.51	13. 2. 20.52	3.101	7		94. 45. 10.29		7	0.33	10.29	19.37
300	53 Virginis	2	0.37	13. 4. 14.54	3.181			105. 24.					
301	β Comæ	3	0.37	13. 5. 0.59	2.811	4	1	61. 22. 31.03	33.09	5	0.33	31.44	18.35
302	Groombridge 2006 .			13. 10. (30)		1		1. 33. 47.30		1	0.24	47.30	19.25
303	61 Virginis	2	0.37	13. 10. 43.38	3.129			107. 29.					
304	Spica	26	0.43	13. 17. 27.24	3.149	19		100. 23. 32.85		19	0.38	32.85	18.95
305	ι^2 Virginis	2	0.37	13. 24. 19.66	3.116			95. 30.					
306	h Virginis	2	0.23	13. 25. 13.80	3.151	1		99. 24. 20.93		1	0.23	20.93	18.73
307	ζ Virginis	8	0.37	13. 27. 12.34	3.055	7		89. 50. 33.85		7	0.44	33.85	18.57
308	τ Bootis	2	0.37	13. 40. 16.60	2.856	12	7	71. 48. 31.62	31.83	19	0.37	31.70	18.12
309	W. B. XIII. 720 . . .	2	0.37	13. 41. 44.11	2.962	2		79. 11. 31.10		2	0.37	31.10	18.11
310	η Ursæ Majoris	1	0.88	13. 41. 44.76	2.376	1		39. 57. 7.04		1	0.88	7.04	18.14
311	p Virginis	3	0.36	13. 47. 9.41	3.082	3		90. 46. 39.41		3	0.36	39.41	17.95
312	η Bootis	16	0.48	13. 47. 41.09	2.859	18	2	70. 51. 48.82	48.53	20	0.44	48.79	18.23
313	τ Virginis	8	0.43	13. 54. 10.07	3.050	5		87. 44. 30.76		5	0.35	30.76	17.69
314	κ Virginis	3	0.26	14. 5. 3.55	3.195	3		99. 35. 13.87		3	0.25	13.87	17.14
315	Arcturus	20	0.60	14. 8. 57.45	2.733	23		70. 3. 0.77		23	0.58	0.77	18.92
316	λ Virginis	2	0.27	14. 11. 9.68	3.237	2		102. 41. 31.59		2	0.27	31.59	16.84
317	*	1	0.32	14. 17. 16.56	3.324	1		108. 31. 13.00		1	0.32	13.00	16.57
318	*	1	0.32	14. 17. 36.71	3.329	1		108. 51. 11.51		1	0.32	11.51	16.55
319	ρ Bootis	5	0.56	14. 25. 29.60	2.590	6	1	58. 58. 52.31	51.41	7	0.40	52.18	16.02
320	*	1	0.26	14. 37. 34.58	2.789	1		71. 35. 12.36		1	0.26	12.36	15.50
321	ϵ Bootis	13	0.47	14. 38. 34.06	2.622	13		62. 18. 12.96		13	0.55	12.96	15.44
322	α Libræ	8	0.32	14. 42. 45.22	3.307	4		105. 25. 40.57		4	0.32	40.57	15.24
323	*	1	0.23	14. 44. 33.77	2.850	1		75. 54. 37.53		1	0.23	37.53	15.10
324	ξ^2 Libræ	4	0.31	14. 48. 47.90	+ 3.245	4		100. 48. 47.58		4	0.31	47.58	14.90
325	β Ursæ Minoris . . .	7	0.45	14. 51. 11.10	- 0.270	9	4	15. 14. 37.62	37.84	14	0.46	37.62	14.76
	β Ursæ Minoris S. P.					1		36.35					
326	ψ Bootis	2	0.44	14. 58. 8.91	+ 2.572	3		62. 28. 36.18		3	0.41	36.18	14.30
327	ν^1 Libræ	3	0.38	14. 58. 25.99	3.335	3		105. 41. 0.21		3	0.38	0.21	14.32
328	{ 2 Lupi }	2	0.45	15. 8. 53.79	3.631	2		119. 36. 15.95		2	0.45	15.95	13.68
	{ δ Lupi }												
329	β Libræ	8	0.35	15. 9. 6.12	3.220	11		98. 50. 13.80		11	0.36	13.80	13.61
330	δ Bootis			15. 9. (30)		3	3	56. 8. 2.73	3.40	6	0.47	3.07	13.67
331	σ^2 Libræ	2	0.45	15. 14. 50.19	3.333	4		104. 36. 20.09		4	0.38	20.09	13.24
332	μ^1 Bootis	5	0.44	15. 18. 56.32	2.267	6		52. 6. 17.36		6	0.45	17.36	12.89
333	μ^2 Bootis	1	0.46	15. 18. 57.70	2.267	1		52. 8. 4.73		1	0.46	4.73	12.89
334	ζ^1 Libræ	4	0.41	15. 19. 58.33	3.374	4		106. 12. 1.64		4	0.41	1.64	12.94
335	B. A. C. 5099	1	0.42	15. 21. 52.71	3.381	1		106. 44. 41.76		1	0.42	41.76	12.78
336	α Coronæ	18	0.52	15. 28. 27.92	+ 2.538	19		62. 47. 15.70		19	0.47	15.70	+ 12.37

331. Of the 6.7th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N. P. D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R.A. 1853, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
337	η Libræ	2	0.23	^h 15. 35. 48. 64	+ 3.371	2		^s 105. 12. 2. 45	"	2	0.23	" 2.45	+ 11.85
338	α Serpentis	15	0.53	15. 37. 1.83	2.951	16		83. 6. 31.38		16	0.48	31.38	11.65
339	χ Lupi	1	0.47	15. 41. 37.79	3.789	1		123. 10. 29.93		1	0.47	29.93	11.46
340	ϵ Serpentis	5	0.46	15. 43. 29.53	2.989	3		85. 4. 34.22		3	0.45	34.22	11.20
341	λ Libræ	2	0.43	15. 44. 48.38	3.471	2		109. 43. 25.35		2	0.43	25.35	11.19
342	B. A. C. 5254	2	0.44	15. 45. 11.38	3.556	2		113. 32. 10.29		2	0.48	10.29	11.14
343	θ Libræ	2	0.44	15. 45. 27.60	+ 3.410	2		106. 17. 35.92		2	0.31	35.92	10.99
344	ζ Ursæ Minoris	3	0.61	15. 49. 24.79	- 2.324	5	4	11. 45. 20.49	19.78	9	0.49	20.17	10.82
345	γ Serpentis	3	0.47	15. 49. 39.95	+ 2.769	4		73. 51. 19.55		4	0.49	19.55	12.05
346	δ Scorpil	3	0.48	15. 51. 38.98	3.535	3		112. 11. 56.86		3	0.48	56.86	10.68
347	β^1 Scorpil	7	0.37	15. 56. 53.74	3.478	7		109. 23. 55.27		7	0.36	55.27	10.28
348	β^2 Scorpil	1	0.47	15. 56. 54.29	3.478	1		109. 23. 43.15		1	0.45	43.15	10.28
349	ω^2 Scorpil	6	0.45	15. 58. 47.49	3.508	4		110. 28. 2.39		4	0.47	2.39	10.15
350	ν^1 Scorpil	1	0.16	16. 3. 27.45	3.478	1		109. 4. 27.31		1	0.16	27.31	9.75
351	δ Ophiuchi	17	0.46	16. 6. 38.77	3.138	16		93. 18. 43.18		16	0.45	43.18	9.63
352	σ Scorpil	4	0.38	16. 12. 15.60	3.634	3		115. 14. 5.37		3	0.39	5.37	9.10
353	γ Herculis	9	0.47	16. 15. 26.27	2.645	11	1	70. 29. 54.20	54.40	12	0.47	54.22	8.80
354	Antares	8	0.41	16. 20. 24.03	3.666	9		116. 6. 4.27		9	0.41	4.27	8.45
355	{ α Normæ B. A. C. 5508 . . . }	2	0.48	16. 21. 47.17	3.899	2		124. 22. 46.26		2	0.43	46.26	8.43
356	*	1	0.53	16. 21. 47.22	3.546	1		87. 41. 15.00		1	0.53	15.00	8.34
357	η Draconis	5	0.52	16. 22. 0.50	0.820	6	1	28. 9. 7.43	10.20	7	0.50	7.83	8.24
358	ω Ophiuchi	1	0.48	16. 23. 25.73	3.546	1		111. 8. 51.22		1	0.48	51.22	8.14
359	λ Ophiuchi	3	0.49	16. 23. 30.16	3.027	3		87. 41. 25.81		3	0.48	25.81	8.27
360	τ Scorpil	5	0.47	16. 26. 44.33	3.725	5		117. 54. 22.32		5	0.47	22.32	7.94
361	ζ Ophiuchi	4	0.45	16. 29. 4.05	3.299	5		100. 15. 54.62		5	0.45	54.62	7.73
362	ζ Herculis	15	0.48	16. 35. 44.72	2.265	15	2	58. 7. 41.01	41.59	17	0.48	41.08	6.79
363	21 Ophiuchi	1	0.58	16. 43. 57.78	3.042	1		88. 31. 46.06		1	0.58	46.06	6.54
364	23 Ophiuchi	1	0.58	16. 46. 44.40	3.203	1		95. 54. 33.41		1	0.58	33.41	6.41
365	κ Ophiuchi	10	0.45	16. 50. 42.71	2.838	11		80. 23. 34.13		11	0.46	34.13	5.96
366	{ 32 Ophiuchi . . . B. A. C. 5749 . . . }	1	0.38	16. 56. 23.86	+ 2.748			75. 42.					
367	ϵ Ursæ Minoris	2	0.48	17. 1. 12.21	- 6.512	2		7. 43. 43.77		2	0.48	43.77	5.09
368	η Ophiuchi	6	0.40	17. 1. 57.06	+ 3.435	3		105. 32. 17.79		3	0.42	17.79	4.92
369	W. B. XVII. 12	3	0.47	17. 2. 15.77	2.977	3		85. 52. 26.28		3	0.47	26.28	5.00
370	W. B. XVII. 61	2	0.52	17. 4. 43.03	3.018	2		87. 40. 33.84		2	0.52	33.84	4.79
371	W. B. XVII. 69	1	0.44	17. 4. 57.45	3.018	1		87. 41. 35.40		1	0.44	35.40	4.77
372	α^1 Herculis	15	0.35	17. 7. 56.76	2.732	11		75. 26. 18.44		11	0.39	18.44	4.45
373	α^2 Herculis	1	0.63	17. 7. 57.01	2.732	1		75. 26. 21.41		1	0.63	21.41	4.45
374	Rümker 5746	2	0.52	17. 8. 49.96	3.017	2		87. 38. 42.64		2	0.52	42.64	4.44
375	π Herculis	3	0.59	17. 9. 55.74	2.088	3		53. 1. 21.56		3	0.56	21.56	4.32
376	{ 66 Herculis . . . B. A. C. 5841 . . . }	1	0.37	17. 11. 42.45	2.818			78. 58.					
377	θ Ophiuchi	4	0.48	17. 12. 59.22	3.680	5		114. 50. 52.05		5	0.50	52.05	4.15
378	b Ophiuchi	1	0.61	17. 17. 23.65	3.660	1		114. 2. 6.33		1	0.61	6.33	3.80
379	d Ophiuchi	5	0.50	17. 17. 58.28	3.819	5		119. 43. 42.24		5	0.50	42.24	3.87
380	σ Ophiuchi	6	0.49	17. 19. 13.35	2.977	5		85. 43. 40.47		5	0.51	40.47	3.54
381	c^2 Ophiuchi	1	0.32	17. 22. 26.92	3.660	1		113. 50. 36.52		1	0.32	36.52	3.29
382	λ Herculis	1	0.38	17. 24. 47.93	2.421			63. 46.					
383	β Draconis	5	0.61	17. 27. 6.78	1.350	6		37. 35. 16.96		6	0.51	16.96	2.86
384	α Ophiuchi	19	0.40	17. 28. 6.79	+ 2.780	16	1	77. 19. 45.26	44.67	17	0.44	45.23	+ 2.97

356. Observed for No. 1263 of the Greenwich 12-year Catalogue.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
385	W. B. XVII. 672...	4	0.59	^h 17. 34. 37. 14	+ 3. 180	4		^o 94. 41. 32. 05	"	4	0.59	32. 05	+ 2. 22
386	58 Ophiuchi.....	1	0.39	17. 34. 37. 51	3. 594	1		111. 36. 25. 12		1	0.39	25. 12	2. 16
387	β Ophiuchi.....	13	0.57	17. 36. 12. 74	2. 964	8		85. 22. 1. 97		8	0.50	1. 97	1. 92
388	μ Herculis.....	9	0.56	17. 40. 42. 46	2. 344	13	4	62. 11. 24. 95	25. 66	17	0.52	25. 12	2. 42
389	ξ Draconis.....	1	0.60	17. 50. 59. 25	1. 036	1		33. 6. 10. 58		1	0.60	10. 58	0. 73
390	ξ Herculis.....	1	0.49	17. 52. 3. 26	2. 332	1		60. 43. 59. 11		1	0.49	59. 11	0. 73
391	66 Ophiuchi.....	1	0.56	17. 52. 58. 79	2. 971	1		85. 37. 8. 92		1	0.56	8. 92	0. 62
392	γ Draconis.....	10	0.50	17. 53. 11. 66	1. 393	8		38. 29. 31. 19		9	0.45	31. 24	0. 63
393	γ ¹ Sagittarii.....	1	0.47	17. 55. 37. 94	3. 840	1		31. 95		1	0.47	51. 99	0. 48
394	γ ² Sagittarii.....	2	0.59	17. 56. 22. 01	3. 858	2		119. 34. 51. 99		2	0.54	15. 21	+ 0. 57
395	72 Ophiuchi.....	4	0.53	18. 0. 22. 90	2. 844	7		120. 25. 15. 21		7	0.52	11. 99	- 0. 10
396	μ Sagittarii.....	23	0.55	18. 4. 58. 37	3. 587	20		80. 27. 11. 99		20	0.53	31. 85	0. 45
397	*	1	0.63	18. 13. 26. 13	3. 267	1		111. 5. 31. 85		1	0.63	41. 52	1. 17
398	η Serpentis.....	6	0.57	18. 13. 42. 26	+ 3. 102	8		98. 20. 41. 52		8	0.54	57. 91	0. 54
399	37 Draconis.....	1	0.56	18. 16. 8. 54	- 0. 353	1		92. 55. 57. 91		1	0.56	52. 72	1. 35
400	38 Draconis.....	1	0.64	18. 17. 50. 45	- 0. 358	1		21. 17. 52. 72		1	0.64	1. 49	1. 48
401	λ Sagittarii.....	3	0.52	18. 18. 53. 89	+ 3. 707	4		21. 19. 1. 49		4	0.47	51. 09	1. 41
402	δ Ursæ Minoris.....	6	0.19	18. 19. 45. 66	- 19. 313	14	4	115. 29. 51. 09	5. 29	25	0.39	4. 86	1. 73
403	B. A. C. 6285.....	1	0.62	18. 21. 26. 02	+ 3. 936	1		3. 24. 4. 56		1	0.62	57. 50	1. 74
404	c Serpentis.....	5	0.68	18. 22. 1. 95	3. 125	4		5. 20		4	0.68	33. 57	1. 85
405	α Lyrae.....	18	0.42	18. 31. 57. 70	2. 031	20	2	123. 4. 57. 50	2. 11	22	0.49	2. 11	3. 08
406	7 Aquilæ.....	6	0.70	18. 43. 22. 89	3. 147	5		92. 4. 33. 57		5	0.70	35. 53	3. 73
407	8 Aquilæ.....	3	0.71	18. 43. 39. 04	3. 157	2		51. 21. 2. 11		2	0.71	7. 40	3. 81
408	β ¹ Lyrae.....	14	0.49	18. 44. 39. 19	2. 213	10		93. 25. 35. 53		10	0.48	18. 50	3. 87
409	β ² Lyrae.....			18. 44. (40)	2. 213	2		93. 29. 7. 40		2	0.59	57. 52	3. 88
410	σ Sagittarii.....	5	0.57	18. 46. 8. 88	3. 729	5		56. 48. 57. 52		5	0.57	26. 67	3. 93
411	θ ¹ Serpentis.....	5	0.67	18. 48. 54. 60	2. 982	4		116. 28. 26. 67		4	0.68	2. 07	4. 35
412	*	2	0.61	18. 52. 31. 80	2. 724	1		85. 59. 2. 07		1	0.61	2. 28	4. 56
413	ε Aquilæ.....	6	0.59	18. 52. 57. 13	2. 723	7	3	75. 4. 2. 28	40. 80	10	0.54	40. 51	4. 49
414	ο Sagittarii.....	2	0.47	18. 55. 52. 32	3. 600	2		75. 7. 40. 39		2	0.47	7. 83	4. 82
415	ζ Aquilæ.....	18	0.58	18. 58. 39. 27	2. 755	11		111. 57. 7. 83		11	0.53	5. 87	5. 02
416	π Sagittarii.....	2	0.47	19. 1. 1. 04	3. 575	2		76. 21. 5. 87		2	0.47	9. 12	5. 29
417	19 Aquilæ.....	5	0.69	19. 1. 47. 85	2. 941	4		111. 15. 9. 12		4	0.70	15. 06	5. 30
418	*	3	0.62	19. 4. 37. 52	3. 333	3		84. 9. 15. 06		3	0.62	34. 81	5. 58
419	21 Aquilæ.....	5	0.68	19. 6. 17. 89	3. 029	3		101. 30. 34. 81		3	0.69	8. 84	5. 78
420	ω Aquilæ.....	9	0.62	19. 10. 54. 98	2. 818	10	1	87. 57. 8. 84	58. 21	11	0.60	58. 41	6. 17
421	δ Aquilæ.....	13	0.69	19. 18. 5. 16	3. 025	8		78. 39. 58. 43		8	0.73	28. 50	6. 82
422	*	2	0.54	19. 21. 23. 45	3. 585	2		87. 10. 28. 50		2	0.59	35. 56	6. 97
423	c Aquilæ.....	5	0.69	19. 21. 35. 01	3. 037	4		112. 16. 35. 56		4	0.68	45. 98	7. 01
424	α Vulpeculæ.....	3	0.74	19. 22. 35. 39	+ 2. 495	3	1	88. 20. 45. 98	47. 01	4	0.63	47. 11	6. 98
425	B. A. C. 6702.....	4	0.62	19. 26. 43. 03	- 2. 013	3	1	65. 37. 47. 14	4. 68	4	0.62	4. 36	7. 40
426	μ Aquilæ.....	6	0.63	19. 26. 54. 49	+ 2. 934	6		13. 44. 4. 26		6	0.63	47. 59	7. 33
427	σ Aquilæ.....	5	0.69	19. 31. 56. 26	2. 965	4		82. 55. 47. 59		4	0.69	1. 44	7. 84
428	χ Aquilæ.....	5	0.69	19. 35. 39. 01	2. 826	3		84. 56. 1. 44		3	0.71	58. 28	8. 20
429	γ Aquilæ.....	22	0.61	19. 39. 15. 21	2. 855	13		78. 30. 58. 28		13	0.62	29. 76	8. 43
430	α Aquilæ.....	19	0.59	19. 43. 36. 63	2. 929	11		79. 44. 29. 76		11	0.57	59. 72	9. 15
431	b Sagittarii.....	2	0.66	19. 47. 55. 23	3. 696	2		81. 30. 59. 72		2	0.66	18. 81	9. 10
432	β Aquilæ.....	19	0.67	19. 48. 5. 51	+ 2. 950	11		117. 33. 18. 81		11	0.64	25. 41	- 8. 65

397. Of the 10th magnitude.

412. Of the 7-8th magnitude.

418. Of the 11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
433	γ Sagittæ	6	0.69	^h 19. ^m 52. ^s 13.19	+ 2.669	4		70. 54. 15.05	"	4	0.69	15.05	— 9.51
434	ϵ Sagittarii	6	0.63	19. 53. 36.77	3.705	7		118. 6. 50.87		7	0.65	50.87	9.59
435	64 Aquilæ	4	0.72	20. 0. 26.40	3.104	3		91. 5. 52.34		3	0.72	52.34	9.99
436	Piazzî XX. 1.	2	0.69	20. 0. 36.47	0.674	2		25. 45. 17.73		2	0.69	17.73	10.07
437	65 Draconis	3	0.66	20. 0. 41.80	0.678	7	3	25. 46. 47.75	49.11	10	0.68	48.16	10.00
438	θ Aquilæ	10	0.66	20. 3. 43.14	3.103	7		91. 15. 14.20		7	0.67	14.20	10.33
439	α^1 Capricorni	1	0.73	20. 9. 29.63	3.334	1		102. 57. 32.15		1	0.73	32.15	10.76
440	α^2 Capricorni	4	0.74	20. 9. 53.67	+ 3.335	2		102. 59. 48.83		2	0.72	48.83	10.78
441	λ Ursæ Minoris	7	0.47	20. 10. 21.13	— 54.219	11	4	1. 7. 49.30	48.85	28	0.43	49.38	10.79
	λ Ursæ Minoris S.P.					8	5	49.50	49.81				
442	σ Capricorni	1	0.70	20. 10. 54.42	+ 3.477	1		109. 34. 24.96		1	0.70	24.96	10.87
443	B. A. C. 6988.	3	0.70	20. 12. 18.55	3.092	3		91. 6. 13.72		3	0.71	13.72	10.94
444	B. A. C. 6992.	1	0.53	20. 12. 30.72	3.379			105. 15.					
445	β Capricorni	7	0.62	20. 12. 44.84	3.380	5		105. 14. 30.82		5	0.61	30.82	11.02
446	π Capricorni	1	0.70	20. 18. 54.23	3.446	1		108. 41. 24.98		1	0.70	24.98	11.47
447	B. A. C. 7041.	6	0.69	20. 20. 18.87	2.081	7		47. 52. 26.96		7	0.68	26.96	11.53
448	ϵ Delphini	4	0.62	20. 26. 11.42	2.868	4	1	79. 11. 36.35	36.79	5	0.58	36.44	11.94
449	B. A. C. 7090.	7	0.71	20. 26. 28.35	0.399	6		21. 43. 19.66		6	0.71	19.66	12.03
450	ν Capricorni.	1	0.47	20. 31. 40.70	3.426	1		108. 39. 7.86		1	0.47	7.86	12.37
451	B. A. C. 7146.	4	0.67	20. 32. 15.87	2.784	4	1	74. 40. 31.83	32.48	5	0.67	31.96	12.39
452	α Delphini	6	0.73	20. 32. 48.63	2.791	2		74. 36. 13.29		2	0.68	13.29	12.42
453	α Cygni	5	0.59	20. 36. 25.30	2.042	6		45. 14. 34.56		6	0.65	34.56	12.66
454	ψ Capricorni	1	0.47	20. 37. 22.96	3.570	1		115. 47. 44.87		1	0.47	44.87	12.56
455	17 Capricorni	6	0.65	20. 37. 38.25	3.495	5		112. 2. 41.53		5	0.68	41.53	12.73
456	ϵ Aquarii	4	0.73	20. 39. 42.81	3.259	3		100. 1. 51.40		3	0.70	51.40	12.85
457	γ^1 Delphini	1	0.66	20. 39. 49.52	2.785	2	1	74. 24. 10.33	10.99	3	0.65	10.55	12.73
458	4 Cephei.	3	0.74	20. 41. 20.26	0.766	3		23. 52. 34.90		3	0.74	34.90	12.97
459	31 Vulpeculæ	7	0.66	20. 45. 50.25	2.566	7		63. 27. 3.35		7	0.66	3.35	13.27
460	32 Vulpeculæ	10	0.70	20. 48. 17.76	+ 2.557	10	1	62. 29. 56.93	56.32	11	0.70	56.87	13.48
461	B. A. C. 7311.	6	0.69	20. 56. 24.42	— 0.604	7	2	14. 38. 37.77	37.50	9	0.70	37.71	14.00
462	θ Capricorni.	5	0.69	20. 57. 40.68	+ 3.387	4		107. 48. 49.06		4	0.67	49.06	14.01
463	61 Cygni (1st star).	3	0.73	21. 0. 18.67	2.673	4	1	51. 58. 15.42	15.98	5	0.74	15.53	17.43
464	61 Cygni (2nd star).	2	0.73	21. 0. 20.26	2.684	2		51. 58. 19.83		2	0.73	19.83	17.23
465	ζ Cygni	15	0.52	21. 6. 40.90	2.550	15	2	60. 22. 25.53	23.43	17	0.56	25.28	14.53
466	α Equulei.	6	0.79	21. 8. 28.45	3.005	3		85. 21. 26.12		3	0.76	26.12	14.62
467	W. B. XXI. 198 ...	1	0.72	21. 9. 25.52	2.998			85. 22.					
468	ν Cygni.	3	0.71	21. 11. 52.52	2.462	4	1	55. 43. 5.32	5.92	5	0.72	5.44	14.92
469	ϵ Capricorni	1	0.80	21. 14. 3.32	3.357	1		107. 27. 28.00		1	0.80	28.00	15.08
470	α Cephei.	14	0.37	21. 15. 4.06	1.438	16	4	28. 2. 9.69	10.25	22	0.51	9.84	15.08
	α Cephei S.P.					2		10.41					
471	*	1	0.66	21. 15. 39.09	0.529	1		19. 4. 1.34		1	0.66	1.34	15.11
472	*	2	0.74	21. 16. 52.81	3.114	2		92. 51. 18.59		2	0.74	18.59	15.19
473	W. B. XXI. 400 ...	1	0.65	21. 17. 29.63	3.114	1		92. 56. 16.11		3	0.71	16.11	15.22
474	*	3	0.74	21. 23. 26.97	3.006	3		85. 34. 35.41		3	0.74	35.41	15.55
475	β Aquarii.	9	0.78	21. 23. 49.08	3.167	8		96. 12. 55.19		8	0.76	55.19	15.61
476	*	4	0.71	21. 25. 24.07	2.845	4		74. 52. 48.70		4	0.71	48.70	15.66
477	β Cephei	9	0.43	21. 26. 44.85	0.805	13	6	20. 5. 2.65	2.70	20	0.57	2.65	15.69
	β Cephei S.P.					1		2.30					
478	ϵ Capricorni	1	0.70	21. 28. 50.74	+ 3.375	1		110. 7. 19.61		1	0.69	19.61	— 15.87

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
479	ξ Aquarii	8	0.75	^h 21. 29. 55.39	+ 3.202	5		^o 98. 30. 39.77	"	5	0.72	39.77	— 15.90
480	B. A. C. 7545.	3	0.73	21. 34. 24.33	1.859	3		33. 10. 28.27		3	0.73	28.27	16.13
481	ε Pegasi	14	0.49	21. 36. 57.99	2.951	8		80. 47. 48.68		8	0.64	48.68	16.30
482	*	3	0.74	21. 38. 46.04	2.951	3		81. 11. 4.17		3	0.74	4.17	16.37
483	δ Capricorni	4	0.84	21. 38. 55.34	3.323	1		106. 47. 31.13		1	0.63	31.13	16.13
484	Lalande 42611	4	0.75	21. 44. 3.17	2.672	4		61. 55. 2.13		4	0.65	2.13	16.63
485	*	1	0.76	21. 44. 24.88	1.079	1		20. 31. 49.00		1	0.76	49.00	16.65
486	μ Capricorni	1	0.63	21. 45. 16.55	3.285	1		104. 14. 29.30		1	0.63	29.30	16.73
487	*	2	0.73	21. 45. 55.47	1.460	2		24. 37. 14.16		2	0.73	14.16	16.72
488	16 Pegasi	1	0.98	21. 46. 22.62	2.730	3	4	64. 45. 53.36	53.09	7	0.75	53.21	16.73
489	*	1	0.72	21. 46. 26.68	1.461	1		24. 32. 57.65		1	0.72	57.65	16.75
490	*	1	0.66	21. 46. 41.05	1.481	1		24. 47. 49.81		1	0.66	49.81	16.76
491	79 Draconis	3	0.74	21. 51. 2.53	0.745	3		16. 59. 33.93		3	0.74	33.93	16.92
492	*			21. 51. (40)	..	1		78. 37. 11.24		1	0.68	11.24	16.99
493	*	3	0.77	21. 51. 48.27	2.927	3		78. 30. 24.34		3	0.77	24.34	17.00
494	29 Aquarii (1st Star)	2	0.81	21. 54. 23.40	3.295	2		107. 40. 16.11		2	0.81	16.11	17.19
495	29 Aquarii (2nd Star)	1	0.81	21. 54. 23.78	3.295	1		107. 40. 14.18		1	0.81	14.18	17.19
496	α Aquarii	17	0.78	21. 58. 13.93	3.083	9		91. 1. 55.57		9	0.73	55.57	17.30
497	18 Cephei			21. 59. (30)		1	1	27. 35. 39.58	37.77	2	0.75	38.68	17.34
498	ι Pegasi	1	0.98	22. 0. 10.30	2.788			65. 22.					
499	*	3	0.74	22. 2. 47.35	2.106	3		34. 8. 25.18		3	0.74	25.18	17.49
500	*	1	0.76	22. 4. 33.43	2.114	1		34. 0. 55.65		1	0.76	55.65	17.56
501	24 Cephei	3	0.80	22. 6. 58.45	1.170	3		18. 22. 57.72		3	0.80	57.72	17.65
502	θ Aquarii	11	0.79	22. 9. 4.39	3.175	6		98. 30. 47.89		6	0.77	47.89	17.76
503	B. A. C. 7786.	5	0.75	22. 12. 53.07	1.755	5		24. 36. 21.07		5	0.75	21.07	17.90
504	γ Aquarii	8	0.81	22. 14. 3.71	3.106	6		92. 7. 34.65		6	0.79	34.65	18.00
505	2 Lacertæ			22. 15. (0)		1	1	44. 12. 8.38	8.88	2	0.66	8.63	18.00
506	*	2	0.68	22. 17. 22.92	1.772	2		24. 2. 7.00		2	0.68	7.00	18.08
507	*	5	0.77	22. 19. 1.50	3.186	5		101. 22. 18.97		5	0.77	18.97	18.14
508	σ Aquarii	1	0.85	22. 22. 51.82	3.184	1		101. 25. 42.63		1	0.85	42.63	18.37
509	β Piscis Australis ..	5	0.76	22. 23. 8.16	3.436	5		123. 5. 50.16		5	0.76	50.16	18.27
510	*	2	0.74	22. 24. 5.36	2.350	2		36. 57. 37.29		2	0.74	37.29	18.32
511	η Aquarii	10	0.79	22. 27. 48.05	3.087	7		90. 52. 24.80		7	0.76	24.80	18.41
512	ζ Pegasi	24	0.77	22. 34. 7.93	2.990	18	1	79. 56. 5.25	5.31	19	0.74	5.25	18.68
513	*	2	0.73	22. 41. 55.96	1.928	2		21. 19. 46.51		2	0.73	46.51	18.90
514	μ Pegasi	11	0.77	22. 42. 54.75	2.888	9	4	66. 10. 25.24	24.75	13	0.77	25.09	18.91
515	λ Aquarii	5	0.82	22. 44. 56.58	3.133	2		98. 21. 37.22		2	0.71	37.22	19.05
516	δ Aquarii	1	0.85	22. 46. 50.61	3.195	1		106. 36. 4.48		1	0.85	4.48	19.06
517	Fomalhaut	9	0.74	22. 49. 31.08	3.334	9		120. 24. 0.07		9	0.75	0.07	18.96
518	α Pegasi	12	0.82	22. 57. 26.46	2.983	12		75. 35. 5.45		12	0.75	5.45	19.31
519	*	2	0.83	22. 57. 37.85	3.157	2		103. 30. 30.06		2	0.83	30.06	19.31
520	*	2	0.60	22. 58. 46.28	3.118	2		97. 37. 6.29		2	0.60	6.29	19.34
521	*	1	0.75	23. 1. 53.27	3.150	1		103. 15. 3.35		1	0.75	3.35	19.41
522	*	1	0.75	23. 4. 10.57	3.146	1		103. 9. 36.48		1	0.75	36.48	19.46
523	ρ Aquarii	2	0.86	23. 6. 42.46	3.114	2		96. 50. 25.86		2	0.86	25.86	19.35
524	*	1	0.75	23. 7. 7.64	3.141	1		102. 52. 18.96		1	0.75	18.96	19.52
525	χ Aquarii	1	0.89	23. 9. 13.49	3.115	1		98. 31. 39.94		1	0.89	39.94	19.60
526	γ Piscium	7	0.83	23. 9. 32.75	3.110	10		87. 31. 12.96		10	0.78	12.96	19.61
527	ψ ³ Aquarii	1	0.85	23. 11. 18.73	+ 3.128	1		100. 24. 48.43		1	0.85	48.43	— 19.62

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—concluded.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1853, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1853, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
528	*	1	0.72	23. 12. 23.81	+ 3.131			102. 12.	"			"	"
529	*	4	0.86	23. 12. 25.61	2.954	4		66. 58. 37.49		4	0.86	37.49	-19.62
530	67 Pegasi	4	0.85	23. 17. 39.63	2.930	4		58. 25. 19.72		4	0.77	19.72	19.76
531	*	1	0.70	23. 18. 20.43	3.120	1		101. 27. 49.27		1	0.70	49.27	19.72
532	κ Piscium	5	0.86	23. 19. 23.79	3.079	6		89. 32. 54.51		6	0.81	54.51	19.64
533	W. B. XXIII. 487..	4	0.80	23. 24. 14.08	3.040	4		81. 29. 24.76		4	0.80	24.76	19.81
534	*	4	0.83	23. 25. 57.59	3.039	4		80. 46. 35.53		4	0.83	35.53	19.83
535	W. B. XXIII. 644..	3	0.72	23. 31. 18.27	3.038	3		78. 56. 21.56		3	0.79	21.56	19.90
536	ι Piscium	6	0.85	23. 32. 23.45	3.085	7		85. 10. 12.32		7	0.80	12.32	19.47
537	γ Cephei	5	0.34	23. 33. 21.06	2.390	9	6	13. 11. 16.98	17.13	16	0.67	16.97	20.08
	γ Cephei S. P.					1		15.95					
538	20 Piscium	1	0.78	23. 40. 23.10	3.085	1		93. 34. 43.22		1	0.78	43.22	20.00
539	δ Sculptoris	6	0.81	23. 41. 15.64	3.141	5		118. 56. 33.23		5	0.78	33.23	19.89
540	*	1	0.82	23. 49. 21.76	3.066	1		85. 19. 10.91		1	0.82	10.91	20.03
541	W. B. XXIII. 1032.	5	0.80	23. 50. 16.39	3.066	4		85. 24. 48.17		4	0.80	48.17	20.04
542	27 Piscium	2	0.82	23. 51. 8.78	3.072	2		94. 22. 16.42		2	0.92	16.42	19.92
543	ω Piscium	7	0.83	23. 51. 45.90	3.080	6		83. 57. 2.20		6	0.80	2.20	19.96
544	29 Piscium	1	0.71	23. 54. 17.44	3.075			93. 51.					
545	2 Ceti	3	0.83	23. 56. 12.38	3.082	3		108. 9. 16.02		3	0.83	16.02	20.07
546	33 Piscium	2	0.89	23. 57. 48.66	3.076	2		96. 31. 46.90		2	0.79	46.90	20.10
547	W. B. XXIII. 1208.	3	0.77	23. 58. 45.51	3.072	3		101. 35. 49.38		3	0.77	49.38	20.06
548	W. B. XXIII. 1227.	2	0.84	23. 59. 51.99	+ 3.071	2		101. 51. 5.22		2	0.84	5.22	-20.06

529. Of the 7-8th magnitude.

531. Of the 13th magnitude.

534. Of the 10-11th magnitude.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1853.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
9	Oeltz. Arg. 547	0.11843	0.08444	1.45192	0.11134	80.522	0.02164	9.59454	0.70817	0.12308	134.571
17	70 Piscium	0.10220	0.08485	1.44887	0.08210	84.038	9.90232	0.03314	0.74084	0.15679	120.576
40	* { R. A. 1 ^h . 54 ^m . (0 ^s) ... N. P. D. 87°. 1'	0.09991	0.09956	1.44877	0.08028	83.936	9.89834	0.06228	0.86778	0.22458	110.582
45	* { R. A. 2 ^h . 4 ^m . (20 ^s) ... N. P. D. 86°. 6'	0.09939	0.09150	1.44898	0.08059	83.869	9.90412	0.05769	0.89392	0.23474	109.080
55	* { R. A. 2 ^h . 27 ^m . (10 ^s) ... N. P. D. 76°. 59'	0.09858	0.09377	1.45110	0.08362	83.391	9.95995	0.00844	0.95133	0.25501	106.010
57	* { R. A. 2 ^h . 27 ^m . (20 ^s) ... N. P. D. 77°. 2'	0.09850	0.09387	1.45111	0.08359	83.390	9.95971	0.00878	0.95178	0.25515	105.977
73	* { R. A. 3 ^h . 5 ^m . (50 ^s) ... N. P. D. 91°. 48'	0.09550	0.09634	1.44778	0.07866	84.030	9.87116	0.08694	1.04862	0.28440	99.333
75	* { R. A. 3 ^h . 6 ^m . (40 ^s) ... N. P. D. 70°. 51'	0.09637	0.09736	1.45345	0.08489	83.019	0.01220	9.98895	1.05067	0.28497	98.246
78	Rümker 842	0.09561	0.09744	1.45258	0.08371	83.219	9.98981	0.00408	1.04002	0.28202	99.327
81	* { R. A. 3 ^h . 15 ^m . (30 ^s) ... N. P. D. 40°. 43'	0.10283	0.10620	1.46600	0.09722	80.031	0.17252	9.84603	1.07224	0.29076	92.265
86	Lalande 6361	0.09509	0.09796	1.45281	0.08366	83.205	9.99808	0.00885	1.08150	0.29319	96.012
113	B. A. C. 1408	0.09010	0.10365	1.45847	0.08444	82.646	0.09975	0.00294	1.22846	0.32539	80.180
115	ν Eridani	0.08845	0.10092	1.44703	0.07858	84.265	9.85001	0.08806	1.23630	0.32673	87.955
119	* { R. A. 4 ^h . 37 ^m . (30 ^s) ... N. P. D. 74°. 21'	0.08792	0.10202	1.45364	0.08156	83.500	0.01473	0.04336	1.25371	0.32957	81.594
123	B. A. C. 1565	0.11189	0.18695	1.54064	0.11006	65.323	0.31463	9.97187	1.29299	0.33518	57.327
124	ι Tauri	0.08591	0.10330	1.45554	0.08151	83.403	0.05158	0.04494	1.29489	0.33540	76.340
149	W. B. V. 658	0.08263	0.10243	1.44821	0.07915	84.432	9.88304	0.07929	1.34483	0.34039	79.604
150	B. A. C. 1754	0.08295	0.10517	1.45849	0.08089	83.282	0.10022	0.05568	1.34616	0.34048	68.708
163	B. A. C. 1879	0.10448	0.37597	1.71286	0.10443	25.038	0.33688	0.05654	1.37612	0.34206	43.736
170	Rümker 1705	0.07944	0.10538	1.45852	0.07930	83.618	0.09923	0.07767	1.39463	0.34242	63.914
171	Rümker 1707	0.07944	0.10538	1.45852	0.07930	83.618	0.10078	0.07787	1.39515	0.34242	63.752
172	* { R. A. 5 ^h . 59 ^m . (30 ^s) ... N. P. D. 66°. 54'	0.07924	0.10466	1.45700	0.07922	83.810	0.07690	0.07880	1.39701	0.34242	65.247
177	Lalande 11946	0.07827	0.10512	1.45802	0.07878	83.794	0.09332	0.08438	1.40945	0.34233	62.852
180	Lalande 12041	0.07784	0.10513	1.45807	0.07860	83.831	0.09402	0.08698	1.41509	0.34220	62.232
183	ζ Canis Majoris	0.07741	0.10613	1.43617	0.08007	85.380	9.51218	0.06753	1.41951	0.34202	86.186
184	B. A. C. 2058	0.07738	0.10499	1.45782	0.07841	83.905	0.09015	0.08943	1.42085	0.34197	61.949
191	* { R. A. 6 ^h . 21 ^m . (50 ^s) ... N. P. D. 64°. 29'	0.07663	0.10501	1.45797	0.07809	83.966	0.09251	0.09378	1.42988	0.34152	60.863
192	* { R. A. 6 ^h . 27 ^m . (20 ^s) ... N. P. D. 55°. 7'	0.07567	0.10744	1.46234	0.07718	83.568	0.14987	0.10314	1.43753	0.34102	55.309
210	W. B. VII. 302	0.07169	0.10206	1.45231	0.07767	84.993	9.98601	0.10070	1.49180	0.33318	63.189
211	W. B. VII. 306	0.07168	0.10206	1.45235	0.07765	84.993	9.98664	0.10095	1.49218	0.33310	63.113
221	* { R. A. 7 ^h . 45 ^m . (10 ^s) ... N. P. D. 73°. 25'	0.06788	0.10119	1.45375	0.07599	85.316	0.01695	0.12268	1.53000	0.32152	57.767
240	* { R. A. 9 ^h . 4 ^m . (10 ^s) ... N. P. D. 70°. 44'	0.06038	0.09658	1.45324	0.07306	86.390	0.00826	0.15761	1.59591	0.27739	53.906
244	* { R. A. 9 ^h . 21 ^m . (40 ^s) ... N. P. D. 64°. 41'	0.05812	0.09588	1.45444	0.07029	86.684	0.03346	0.18456	1.60698	0.26417	50.281

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1853.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
246	* { R. A. 9 ^h . 23 ^m . (0 ^s).... } N. P. D. 64°. 56'..... }	0.05804	0.09572	1.45433	0.07035	86.707	0.03137	0.18415	1.60779	0.26309	50.471
247	9 Leonis.....	0.05752	0.09521	1.45420	0.07004	86.808	0.02918	0.18715	1.61141	0.25800	50.467
254	34 Leonis.....	0.05689	0.09112	1.45077	0.07386	87.149	9.95308	0.15007	1.62862	0.22699	59.051
257	B. A. C. 3579.....	0.05588	0.08955	1.45058	0.07323	87.384	9.94955	0.15733	1.63554	0.20937	59.495
273	* { R. A. 11 ^h . 29 ^m . (50 ^s).. } N. P. D. 94°. 36'..... }	0.05450	0.08234	1.44803	0.08110	87.638	9.87898	0.04941	1.65207	0.12426	75.929
281	10 Virginis.....	0.05433	0.07897	1.44824	0.07803	88.078	9.88428	0.09617	1.65374	0.08233	75.368
283	* { R. A. 12 ^h . 3 ^m . (20 ^s).... } N. P. D. 99°. 33'..... }	0.05401	0.07883	1.44830	0.08320	87.746	9.88891	0.01444	1.65374	0.07388	81.095
285	B. A. C. 4205.....	0.05133	0.07668	1.44727	0.06673	89.274	9.88737	0.21828	1.65294	0.04450	67.722
292	37 Virginis.....	0.05477	0.07454	1.44799	0.07758	88.405	9.87745	0.10254	1.65019	0.00401	80.631
302	Groombridge 2006.....						9.94369	0.33252	1.64413	9.94952	59.141
317	* { R. A. 14 ^h . 17 ^m . (20 ^s).. } N. P. D. 108°. 31'..... }	0.05765	0.06459	1.45214	0.08581	87.993	9.98556	9.97220	1.61868	9.80351	96.593
318	* { R. A. 14 ^h . 17 ^m . (40 ^s).. } N. P. D. 108°. 51'..... }	0.05762	0.06453	1.45223	0.08593	87.983	9.98758	9.97012	1.61851	9.80267	96.643
320	* { R. A. 14 ^h . 37 ^m . (30 ^s).. } N. P. D. 71°. 35'..... }	0.05907	0.06271	1.44383	0.07291	89.561	9.76923	0.15964	1.60748	9.75252	96.456
323	* { R. A. 14 ^h . 44 ^m . (30 ^s).. } N. P. D. 75°. 55'..... }	0.06003	0.06250	1.44483	0.07460	89.319	9.79162	0.14091	1.60322	9.73423	98.260
356	* { R. A. 16 ^h . 21 ^m . (50 ^s).. } N. P. D. 87°. 41'..... }	0.06903	0.05664	1.44749	0.07878	88.612	9.86303	0.08522	1.52282	9.46316	114.086
404	c Serpentis.....	0.08148	0.05446	1.44900	0.07909	87.764	9.90436	0.08043	1.36339	9.31088	127.034
406	7 Aquilæ.....	0.08369	0.05477	1.44946	0.07892	87.567	9.91670	0.08322	1.32717	9.33805	128.149
407	8 Aquilæ.....	0.08371	0.05477	1.44949	0.07891	87.564	9.91724	0.08332	1.32667	9.33850	128.140
423	c Aquilæ.....	0.08750	0.05594	1.44769	0.07942	87.326	9.86877	0.07554	1.25582	9.41903	133.582
433	γ Sagittæ.....	0.09101	0.05603	1.44188	0.08309	87.264	9.69994	0.01969	1.19253	9.50123	144.690
435	64 Aquilæ.....	0.09111	0.05778	1.44860	0.07895	86.912	9.89367	0.08267	1.17468	9.52456	133.879
436	Piazzi XX. 1.....	0.10619	0.02837	1.40956	0.10357	88.842	9.36663	9.87368	1.17388	9.52560	159.201
443	B. A. C. 6988.....	0.09215	0.05847	1.44859	0.07893	86.793	9.89341	0.08300	1.14816	9.55834	134.255
455	17 Capricorni.....	0.09538	0.05859	1.45469	0.07293	86.490	0.03667	0.15781	1.08919	9.63039	121.433
467	W. B. XXI. 198.....	0.09664	0.06247	1.44711	0.08062	86.205	9.85285	0.05712	1.01044	9.71834	138.309
473	W. B. XXI. 400.....	0.09715	0.06316	1.44894	0.07824	86.146	9.90293	0.09302	0.99021	9.73943	133.581
485	* { R. A. 21 ^h . 44 ^m . (20 ^s).. } N. P. D. 20°. 32'..... }	0.13281	0.06549	1.41629	0.12959	82.001	9.72041	9.62621	0.92207	9.80754	160.216
490	* { R. A. 21 ^h . 46 ^m . (40 ^s).. } N. P. D. 24°. 48'..... }	0.12476	0.04636	1.42293	0.12076	84.073	9.71525	9.64502	0.91623	9.81328	159.823
493	* { R. A. 21 ^h . 51 ^m . (50 ^s).. } N. P. D. 78°. 30'..... }	0.09957	0.06593	1.44601	0.08333	85.661	9.82530	0.01326	0.90311	9.82574	141.168
494	29 Aquarii.....	0.10027	0.06578	1.45168	0.07256	85.921	9.97545	0.16411	0.89697	9.83144	123.470
500	* { R. A. 22 ^h . 4 ^m . (30 ^s).. } N. P. D. 34°. 1'..... }	0.11539	0.05784	1.43319	0.10947	84.132	9.74570	9.67599	0.87149	9.85552	157.371
519	* { R. A. 22 ^h . 57 ^m . (40 ^s).. } N. P. D. 103°. 31'..... }	0.10245	0.07247	1.44959	0.07357	85.405	9.92459	0.15377	0.75437	9.96911	123.264
520	* { R. A. 22 ^h . 58 ^m . (50 ^s).. } N. P. D. 97°. 37'..... }	0.10205	0.07272	1.44898	0.07607	85.294	9.90563	0.12315	0.75232	9.97139	126.496
521	* { R. A. 23 ^h . 1 ^m . (50 ^s).. } N. P. D. 103°. 15'..... }	0.10254	0.07293	1.44946	0.07365	85.373	9.92158	0.15287	0.74732	9.97755	123.135

For No. 302, log. e = - 0.03906; log. f = 9.65586; log. g = 1.11694; log. h = - 0.03870; l = 237.658.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1853.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
522	* { R. A. 23^h . 4^m . (10^s)... N. P. D. 103° . $10'$ }	0.10258	0.07316	1.44942	0.07368	85.354	9.92018	0.15253	0.74331	9.98172	123.063
524	* { R. A. 23^h . 7^m . (10^s)... N. P. D. 102° . $52'$ }	0.10264	0.07349	1.44933	0.08451	84.588	9.91782	0.15130	0.73891	9.98748	123.023
525	* χ Aquarii	0.10235	0.07377	1.44895	0.07563	85.232	9.90505	0.12869	0.73548	9.99105	125.272
528	* { R. A. 23^h . 12^m . (20^s)... N. P. D. 102° . $12'$ }	0.10269	0.07406	1.44917	0.07405	85.279	9.91344	0.14823	0.73054	9.99717	123.057
531	* { R. A. 23^h . 18^m . (20^s)... N. P. D. 101° . $28'$ }	0.10275	0.07471	1.44901	0.07434	85.225	9.90870	0.14474	0.72229	0.00826	123.041

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS

AND

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF THE

SUN, MOON, AND PLANETS,

(The Right Ascensions of the Sun, Moon, and Planets corrected for Personal Equation ; and the North Polar Distances corrected for Discordance of Direct and Reflexion Results, and for Flexure of the Telescope of the Transit-Circle,)

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC:

WITH

THE INFERRED POSITION OF THE ECLIPTIC; THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE.

1853.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER ; and VERTICAL DIAMETERS of the SUN, corrected for Refraction and Parallax : compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1853.	m s	s	s	' "	"	"	1853.	m s	s	s	' "	"	"
Jan. 5	2. 21.75	21.70	- 0.05	32. 35.66	36.40	+ 0.74	July 4	2. 17.41	17.30	- 0.11	31. 29.57	31.80	+ 2.23
11	2. 21.04	20.82	- 0.22	32. 35.82	35.80	- 0.02	6	2. 16.84	17.10	+ 0.26			
13	2. 20.22	20.50	+ 0.28	32. 32.73	35.60	+ 2.87	8	2. 16.97	16.90	- 0.07	31. 29.23	32.00	+ 2.77
15	2. 20.22	20.14	- 0.08	32. 33.92	35.40	+ 1.48	12	2. 16.55	16.42	- 0.13	31. 28.80	32.40	+ 3.60
22	2. 18.61	18.70	+ 0.09	32. 31.41	34.20	+ 2.79	23	2. 15.00	14.78	- 0.22	31. 33.13	33.80	+ 0.67
31	2. 16.58	16.68	+ 0.10	32. 29.66	31.80	+ 2.14	25	2. 14.31	14.44	+ 0.13	31. 33.56	34.20	+ 0.64
							28	2. 13.72	13.94	+ 0.22	31. 32.65	34.80	+ 2.15
Feb. 2	2. 16.02	16.22	+ 0.20	32. 30.50	31.20	+ 0.70	Aug. 1	2. 13.26	13.26	0.00	31. 36.39	35.80	- 0.59
7	2. 15.05	15.08	+ 0.03	32. 28.78	29.40	+ 0.62	4	2. 12.88	12.74	- 0.14	31. 36.89	36.60	- 0.29
18				32. 31.92	25.20	- 6.72	8				31. 40.92	37.80	- 3.12
19	2. 12.65	12.52	- 0.13	32. 21.62	24.80	+ 3.18	10	2. 11.60	11.74	+ 0.14	31. 38.99	38.40	- 0.59
23	2. 11.82	11.78	- 0.04	32. 22.52	23.00	+ 0.48	17	2. 10.40	10.62	+ 0.22	31. 39.17	41.00	+ 1.83
28	2. 10.75	10.94	+ 0.19	32. 20.75	20.60	- 0.15	20				31. 41.90	42.20	+ 0.30
							30				31. 45.34	46.40	+ 1.06
Mar. 4	2. 10.13	10.36	+ 0.23	32. 17.53	18.60	+ 1.07	Sept. 6	2. 8.78	8.42	- 0.36	31. 50.66	49.60	- 1.06
10	2. 9.44	9.68	+ 0.24	32. 14.59	15.40	+ 0.81	14	2. 7.82	8.12	+ 0.30	31. 51.95	53.80	+ 1.85
11	2. 9.77	9.58	- 0.19	32. 12.36	14.80	+ 2.44	19	2. 8.11	8.14	+ 0.03	31. 57.86	56.40	- 1.46
12	2. 9.55	9.48	- 0.07	32. 14.07	14.40	+ 0.33	21	2. 8.46	8.16	- 0.30	31. 56.08	57.60	+ 1.52
18	2. 9.20	9.08	- 0.12	32. 11.52	11.20	- 0.32	22	2. 8.04	8.20	+ 0.16	31. 56.85	58.00	+ 1.15
19	2. 8.77	9.04	+ 0.27	32. 8.49	10.60	+ 2.11	26	2. 8.49	8.36	- 0.13			
26	2. 8.98	8.88	- 0.10	32. 5.31	6.80	+ 1.49	Oct. 1				31. 59.85	62.80	+ 2.95
29	2. 9.04	8.92	- 0.12	32. 7.14	5.20	- 1.94	3				32. 0.94	4.00	+ 3.06
30	2. 8.93	8.92	- 0.01	32. 5.45	4.60	- 0.85	10	2. 10.00	9.76	- 0.24	32. 8.63	8.00	- 0.63
31	2. 9.00	8.94	- 0.06	32. 4.16	4.00	- 0.16	14	2. 10.58	10.36	- 0.22	32. 5.94	10.20	+ 4.26
Apr. 28	2. 11.63	11.64	+ 0.01	31. 45.43	49.20	+ 3.77	15	2. 10.77	10.52	- 0.25			
30	2. 11.97	11.94	- 0.03	31. 46.80	48.20	+ 1.40	18	2. 11.20	11.04	- 0.16	32. 10.20	12.40	+ 2.20
							22	2. 11.66	11.78	+ 0.12	32. 15.35	14.60	- 0.75
May 2	2. 12.32	12.26	- 0.06	31. 48.69	47.20	- 1.49	26	2. 12.50	12.60	+ 0.10	32. 17.01	16.60	- 0.41
5	2. 12.74	12.72	- 0.02	31. 45.88	45.80	- 0.08	28				32. 15.45	17.60	+ 2.15
14	2. 14.36	14.22	- 0.14	31. 42.20	42.00	- 0.20	Nov. 1	2. 13.81	13.94	+ 0.13	32. 19.86	19.60	- 0.26
16				31. 40.70	41.20	+ 0.50	4	2. 14.53	14.62	+ 0.09	32. 17.73	21.00	+ 3.27
17	2. 14.86	14.70	- 0.16	31. 39.33	41.00	+ 1.67	16	2. 17.43	17.48	+ 0.05	32. 23.56	26.60	+ 3.04
18	2. 15.23	14.86	- 0.37	31. 44.20	40.60	- 3.60	17	2. 17.68	17.72	+ 0.04	32. 26.04	27.00	+ 0.96
20	2. 15.11	15.18	+ 0.07	31. 47.20	39.80	- 7.40	18	2. 18.11	17.94	- 0.17	32. 27.78	27.40	- 0.38
23	2. 15.64	15.64	0.00	31. 24.81	38.80	(+ 13.99)	19	2. 18.13	18.18	+ 0.05	32. 26.25	27.80	+ 1.55
24	2. 15.82	15.78	- 0.04	31. 43.49	38.60	- 4.89	21	2. 18.35	18.62	+ 0.27	32. 29.51	28.60	- 0.91
25				31. 36.23	38.20	+ 1.97	23				32. 28.90	29.20	+ 0.30
26	2. 15.90	16.06	+ 0.16	31. 37.74	37.80	+ 0.06	Dec. 1	2. 20.94	20.62	- 0.32	32. 29.93	31.80	+ 1.87
27	2. 16.35	16.20	- 0.15	31. 37.54	37.60	+ 0.06	2	2. 20.85	20.80	- 0.05	32. 31.41	32.00	+ 0.59
June 7	2. 17.36	17.38	+ 0.02	31. 36.03	34.60	- 1.43	14				32. 32.03	35.00	+ 2.97
8	2. 17.24	17.46	+ 0.22	31. 31.13	34.40	+ 3.27	16	2. 22.40	22.42	+ 0.02	32. 36.47	35.40	- 1.07
11	2. 17.52	17.66	+ 0.14	31. 37.50	33.80	- 3.70	27	2. 22.41	22.48	+ 0.07	32. 34.19	36.40	+ 2.21
14	2. 17.85	17.82	- 0.03	31. 32.88	33.40	+ 0.52	28	2. 22.12	22.44	+ 0.32	32. 37.46	36.40	- 1.06
17	2. 17.66	17.92	+ 0.26	31. 31.85	32.80	+ 0.95	29	2. 22.36	22.39	+ 0.03	32. 34.13	36.40	+ 2.27
23	2. 17.91	17.90	- 0.01	31. 30.85	32.20	+ 1.35	31	2. 22.15	22.24	+ 0.09	32. 37.51	36.40	- 1.11
29	2. 17.79	17.66	- 0.13	31. 30.22	32.00	+ 1.78							
30	2. 17.76	17.60	- 0.16	31. 29.58	31.80	+ 2.22							

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1853.	m s	s	s	' "	"	"	1853.	m s	s	s	' "	"	"
Jan. 21				30. 3'12	5'56	+ 2'44	June 21				33. 5'12	6'40	+ 1'28
22				30. 21'92	22'70	+ 0'78							
23				30. 40'96	41'94	+ 0'98	July 17				32. 54'61	59'26	+ 4'65
Feb. 23				32. 7'43	5'80	- 1'63	19				32. 50'16	49'24	- 0'92
Mar. 24	2. 16'65	16'56	- 0'09				Sept. 16	2. 10'37	10'24	- 0'13			
25				33. 1'33	0'12	- 1'21	17				30. 43'58	45'24	+ 1'66
Apr. 23				33. 26'01	25'84	- 0'17	Oct. 16	2. 5'36	5'06	- 0'30	30. 11'46	8'90	- 2'56
26				32. 53'77	50'60	- 3'17	18				29. 46'94	44'90	- 2'04
May 22	2. 28'79	28'42	- 0'37	33. 32'23	32'80	+ 0'57	Nov. 16				29. 32'78	30'30	- 2'48
							17				29. 29'03	28'36	- 0'67
							18				29. 28'66	30'48	+ 1'82

VERTICAL DIAMETERS of VENUS, compared with those of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1853.	"	"	"
February 18	10'50	10'60	+ 0'10
March 29	11'18	9'80	- 1'38
November 19	19'51	18'40	- 1'11
21	19'81	18'80	- 1'01
25	19'42	19'40	- 0'02
December 16	26'75	23'80	- 2'95
29	30'17	27'80	- 2'37

VERTICAL DIAMETER of MARS, compared with that of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1853.	"	"	"
December 1	9'76	7'00	- 2'76

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER ; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1853.	s	s	s	"	"	"	1853.	s	s	s	"	"	"
Mar. 25	2.94	2.88	-0.06	39.10	37.00	-2.10	June 6	3.48	3.38	-0.10	47.23	43.20	-4.03
28	3.09	2.88	-0.21	40.28	37.00	-3.28	7	3.32	3.38	+0.06	42.03	43.20	+1.17
29	3.03	2.90	-0.13	38.95	37.20	-1.75	11	3.74	3.40	-0.34	47.60	43.40	-4.20
30				38.14	37.40	-0.74	16	3.41	3.36	-0.05	43.37	43.20	-0.17
Apr. 1	2.96	2.94	-0.02	39.02	37.60	-1.42	17	3.89	3.36	-0.53	47.82	43.20	-4.62
7	3.20	3.00	-0.20	41.65	38.40	-3.25	21	3.57	3.36	-0.21	46.64	43.20	-3.44
18	3.27	3.10	-0.17	43.29	39.60	-3.69	23	3.50	3.34	-0.16	45.70	43.00	-2.70
26	3.45	3.16	-0.29				24	3.98	3.34	-0.64	44.83	43.00	-1.83
27	3.60	3.18	-0.42	45.33	40.60	-4.73	29	3.76	3.32	-0.44	44.39	42.80	-1.59
30				43.26	41.00	-2.26	July 5	3.54	3.30	-0.24	45.46	42.40	-3.06
May 14	3.58	3.30	-0.28	43.86	42.20	-1.66	12	3.25	3.26	+0.01	45.72	42.00	-3.72
20	3.33	3.34	+0.01	45.89	42.60	-3.29	22	3.42	3.20	-0.22	43.08	41.20	-1.88
23	3.36	3.36	0.00	46.77	42.80	-3.97	25	3.28	3.16	-0.12	42.90	40.80	-2.10
25	3.65	3.36	-0.29	45.19	42.80	-2.39	Aug. 1	3.61	3.10	-0.51	42.62	40.00	-2.62
26	3.26	3.36	+0.10				10	3.26	3.04	-0.22	40.42	39.20	-1.22
June 3	3.64	3.38	-0.26	43.34	43.20	-0.14	11	3.09	3.02	-0.07	40.16	39.00	-1.16

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN ; and VERTICAL DIAMETERS of SATURN :
compared with those of the Nautical Almanac.

Jan. 3	1.46	1.28	-0.18	20.87	17.40	-3.47	Oct. 2	1.56	1.34	-0.22			
5	1.60	1.26	-0.34	19.21	17.20	-2.01	5	1.47	1.36	-0.11	19.23	18.00	-1.23
6	1.47	1.26	-0.21	17.98	17.20	-0.78	8	1.43	1.36	-0.07			
7	1.37	1.26	-0.11	19.95	17.20	-2.75	24	1.49	1.38	-0.11			
8				18.14	17.20	-0.94	Nov. 1	1.54	1.40	-0.14			
11	1.29	1.24	-0.05	19.17	17.00	-2.17	3	1.61	1.40	-0.21			
13	1.30	1.24	-0.06	19.37	17.00	-2.37	5				18.34	18.60	+0.26
15	1.46	1.24	-0.22	18.79	17.00	-1.79	8	1.48	1.40	-0.08			
18	1.28	1.24	-0.04				10	1.41	1.40	-0.01			
20	1.45	1.24	-0.21	18.64	16.80	-1.84	17	1.64	1.40	-0.24	20.91	18.60	-2.31
22	1.15	1.22	+0.07	19.35	16.60	-2.75	18	1.52	1.40	-0.12			
31	1.38	1.20	-0.18	18.05	16.60	-1.45	19	1.56	1.40	-0.16	15.41	18.60	+3.19
Sept. 5	1.40	1.28	-0.12	19.38	17.00	-2.38	21	1.67	1.40	-0.27	19.26	18.60	-0.66
13	1.61	1.30	-0.31	17.99	17.20	-0.79	23	1.35	1.40	+0.05			
18	1.51	1.32	-0.19				Dec. 31	1.21	1.36	+0.15			
25	1.42	1.34	-0.08										

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
d h m s	h m s	s	s	° ' "	"	"
Jan. 5. 0. 5.49.0	19. 5.47.80	47.76	-0.04	112. 35.48.51	47.40	-1.11
11. 0. 8.20.9	19. 31.59.39	59.43	+0.04	111. 46.29.61	29.60	-0.01
13. 0. 9. 7.2	19. 40.39.00	38.73	-0.27	111. 26.38.26	37.80	-0.46
15. 0. 9.50.5	19. 49.15.55	15.36	-0.19	111. 5. 7.52	6.70	-0.82

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—*continued.*

Mean Solar Time of Observation.					R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s					h m s	s	s	° ' "	"	"
Jan.	21.	0.	11.	43.3	20. 14. 47.95	47.84	— 0.11	109. 51. 1.16	4.20	+ 3.04
	22.	0.	11.	59.6	20. 19. 0.89	0.56	— 0.33	109. 37. 23.63	24.40	+ 0.77
	31.	0.	13.	48.5	20. 56. 19.05	18.99	— 0.06	107. 18. 51.51	51.70	+ 0.19
Feb.	2.	0.	14.	4.2	21. 4. 27.87	27.56	— 0.31	106. 44. 31.93	32.70	+ 0.77
	7.	0.	14.	28.5	21. 24. 35.10	34.90	— 0.20	105. 13. 44.59	45.10	+ 0.51
	18.	0.	14.	13.3	....	...	...	101. 32. 36.77	35.80	— 0.97
	19.	0.	14.	7.5	22. 11. 32.62	32.40	— 0.22	101. 11. 16.57	16.50	— 0.07
	23.	0.	13.	37.4	22. 26. 48.67	48.49	— 0.18	99. 44. 20.09	20.10	+ 0.01
	26.	0.	13.	8.2	22. 38. 9.06	9.09	+ 0.03	98. 37. 35.33	34.20	— 1.13
	28.	0.	12.	46.4	22. 45. 40.15	40.04	— 0.11	97. 52. 25.47	24.80	— 0.67
Mar.	4.	0.	11.	56.0	23. 0. 35.99	36.01	+ 0.02	96. 20. 45.28	46.50	+ 1.22
	10.	0.	10.	28.3	23. 22. 47.36	47.24	— 0.12	94. 0. 45.81	46.90	+ 1.09
	11.	0.	10.	12.4	23. 26. 27.98	27.84	— 0.14	93. 37. 13.50	14.30	+ 0.80
	12.	0.	9.	56.1	23. 30. 8.15	8.12	— 0.03	93. 13. 38.73	39.20	+ 0.47
	18.	0.	8.	13.2	23. 52. 4.29	4.11	— 0.18	90. 51. 35.09	36.60	+ 1.51
	19.	0.	7.	55.2	23. 55. 42.84	42.66	— 0.18	90. 27. 53.54	54.50	+ 0.96
	26.	0.	5.	46.3	0. 21. 9.41	9.25	— 0.16	87. 42. 31.91	33.40	+ 1.49
	29.	0.	4.	50.6	0. 32. 3.28	3.03	— 0.25	86. 32. 14.56	17.80	+ 3.24
	30.	0.	4.	32.0	0. 35. 41.18	41.07	— 0.11	86. 8. 58.55	59.70	+ 1.15
	31.	0.	4.	13.7	0. 39. 19.37	19.19	— 0.18	85. 45. 45.86	46.00	+ 0.14
April	2.	0.	3.	37.3	0. 46. 35.97	35.79	— 0.18	84. 59. 31.61	32.40	+ 0.79
	27.	23.	57.	21.3	2. 22. 49.29	49.24	— 0.05	75. 47. 15.59	16.10	+ 0.51
	29.	23.	57.	4.4	2. 30. 25.47	25.04	— 0.43	75. 10. 5.91	6.00	+ 0.09
May	1.	23.	56.	48.9	2. 38. 3.09	3.05	— 0.04	74. 33. 52.21	53.80	+ 1.59
	4.	23.	56.	30.8	2. 49. 34.57	34.29	— 0.28	73. 41. 37.10	30.10	(— 7.00)
	11.	23.	56.	7.8	3. 16. 47.41	47.27	— 0.14	71. 48. 51.06	54.30	+ 3.24
	13.	23.	56.	6.2	3. 24. 38.93	38.93	0.00	71. 19. 23.33	24.60	+ 1.27
	15.	23.	56.	7.3	3. 32. 33.09	32.82	— 0.27	70. 51. 24.75	10.60	(— 14.15)
	16.	23.	56.	8.5	3. 36. 30.86	30.58	— 0.28	70. 37. 32.94	32.70	— 0.24
	17.	23.	56.	10.0	3. 40. 28.95	28.90	— 0.05	70. 24. 15.49	14.60	— 0.89
	19.	23.	56.	15.3	3. 48. 27.35	27.14	— 0.21	69. 58. 36.29	38.60	+ 2.31
	22.	23.	56.	26.9	4. 0. 28.71	28.52	— 0.19	69. 22. 47.89	48.70	+ 0.81
	23.	23.	56.	31.9	4. 4. 30.28	30.02	— 0.26	69. 11. 46.76	34.20	(— 12.56)
	24.	23.	56.	37.3	....	...	...	69. 0. 40.88	40.90	(+ 0.02)
	25.	23.	56.	43.3	4. 12. 34.82	34.60	— 0.22	68. 50. 4.09	9.30	+ 5.21
	26.	23.	56.	49.9	4. 16. 37.97	37.64	— 0.33	68. 39. 61.64	59.50	— 2.14
June	2.	23.	57.	47.8	4. 45. 11.93	11.95	+ 0.02	....	...	...
	6.	23.	58.	30.0	5. 1. 40.45	40.32	— 0.13	67. 13. 7.92	6.80	— 1.12
	7.	23.	58.	41.3	5. 5. 48.37	48.20	— 0.17	67. 7. 34.38	33.50	— 0.88
	10.	23.	59.	16.7	5. 18. 13.52	13.30	— 0.22	66. 53. 18.32	19.00	+ 0.68
	13.	23.	59.	53.8	5. 30. 40.36	40.12	— 0.24	66. 42. 44.94	44.40	— 0.54
	17.	0.	0.	31.8	5. 43. 8.17	8.02	— 0.15	66. 35. 52.14	51.80	— 0.34
	23.	0.	1.	48.9	6. 8. 4.90	4.77	— 0.13	66. 33. 16.15	15.30	— 0.85
	24.	0.	2.	1.5	6. 12. 14.00	14.12	+ 0.12	66. 34. 16.05	15.90	— 0.15
	29.	0.	3.	3.9	6. 32. 59.41	59.22	— 0.19	66. 45. 28.20	28.80	+ 0.60
	30.	0.	3.	15.9	6. 37. 8.00	7.76	— 0.24	66. 48. 57.59	56.90	— 0.69
July	4.	0.	4.	1.2	6. 53. 39.72	39.58	— 0.14	67. 6. 52.20	52.10	— 0.10
	5.	0.	4.	11.9	6. 57. 46.94	46.81	— 0.13	67. 12. 16.85	21.00	+ 4.15
	6.	0.	4.	22.2	7. 1. 53.82	53.72	— 0.10	67. 18. 14.59	13.70	— 0.89
	8.	0.	4.	41.7	7. 10. 6.49	6.44	— 0.05	67. 31. 9.60	10.00	+ 0.40
	12.	0.	5.	16.1	7. 26. 27.20	26.85	— 0.35	68. 1. 41.84	41.20	— 0.64
	20.	0.	6.	0.4	7. 58. 44.08	43.93	— 0.15	....	...	...
	23.	0.	6.	8.2	8. 10. 41.63	41.34	— 0.29	69. 55. 60.01	59.20	— 0.81
	25.	0.	6.	10.4	8. 18. 36.94	36.78	— 0.16	70. 21. 17.78	16.60	— 1.18
	28.	0.	6.	9.4	8. 30. 25.58	25.64	+ 0.06	71. 1. 39.15	39.30	+ 0.15
Aug.	1.	0.	6.	0.3	8. 46. 2.69	2.63	— 0.06	71. 59. 52.58	51.70	— 0.88
	4.	0.	5.	47.1	8. 57. 39.15	39.16	+ 0.01	72. 46. 39.74	38.00	— 1.74
	8.	0.	5.	21.3	9. 12. 59.49	59.46	— 0.03	73. 52. 53.01	53.60	+ 0.59

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER—concluded.

Mean Solar Time of Observation.		R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853.	d h m s	h m s	s	s	° ' "	"	"
Aug.	10. 0. 5. 5 ^o	9. 20. 36 ²⁰	36 ⁰¹	— 0 ¹⁹	74. 27. 35 ⁵²	35 ⁹⁰	+ 0 ³⁸
	17. 0. 3. 49 ⁰	9. 46. 55 ⁹⁰	55 ⁸⁰	— 0 ¹⁰	76. 36. 36 ²⁴	36 ²⁰	— 0 ⁰⁴
	19. 0. 3. 22 ⁴	9. 54. 22 ³⁸	22 ³³	— 0 ⁰⁵	....	...	...
	20. 0. 3. 8 ⁴	....	...	...	77. 35. 11 ³⁵	10 ⁰⁰	— 1 ³⁵
	30. 0. 0. 25 ⁵	10. 34. 47 ⁰⁴	47 ¹⁰	+ 0 ⁰⁶	81. 2. 28 ²⁵	24 ⁴⁰	— 3 ⁸⁵
Sept.	4. 23. 58. 31 ⁷	10. 56. 32 ²⁵	32 ³⁶	+ 0 ¹¹	....	...	...
	5. 23. 58. 12 ¹	11. 0. 9 ¹³	9 ⁰¹	— 0 ¹²	83. 36. 24 ⁶²	24 ⁷⁰	+ 0 ⁰⁸
	13. 23. 55. 27 ¹	11. 28. 56 ¹⁵	55 ⁷⁶	— 0 ³⁹	86. 38. 35 ⁷³	36 ³⁰	+ 0 ⁵⁷
	18. 23. 53. 40 ⁸	11. 46. 52 ³⁰	52 ²⁵	— 0 ⁰⁵	88. 34. 37 ⁹⁹	36 ⁶⁰	— 1 ³⁹
	20. 23. 52. 58 ⁶	11. 54. 3 ¹¹	3 ⁰⁶	— 0 ⁰⁵	89. 21. 17 ⁸⁰	17 ³⁰	— 0 ⁵⁰
	21. 23. 52. 37 ⁷	11. 57. 38 ⁶⁹	38 ⁶¹	— 0 ⁰⁸	89. 44. 40 ¹¹	39 ⁹⁰	— 0 ²¹
	25. 23. 51. 15 ⁴	12. 12. 2 ³⁶	2 ²⁵	— 0 ¹¹	91. 18. 17 ⁰⁵	18 ²⁰	+ 1 ¹⁵
	29. 23. 49. 56 ⁵	12. 26. 29 ⁴³	29 ²¹	— 0 ²²	92. 51. 53 ⁷⁹	52 ⁸⁰	— 0 ⁹⁹
	30. 23. 49. 37 ²	12. 30. 6 ⁶⁹	6 ⁶¹	— 0 ⁰⁸	93. 15. 14 ⁴⁸	13 ²⁰	— 1 ²⁸
Oct.	2. 23. 48. 59 ⁷	12. 37. 22 ²⁰	22 ³²	+ 0 ¹²	94. 1. 48 ⁶⁰	47 ⁵⁰	— 1 ¹⁰
	9. 23. 47. 0 ³	13. 2. 58 ³⁵	58 ⁶³	+ 0 ²⁸	96. 42. 60 ⁹⁸	57 ⁹⁰	— 3 ⁰⁸
	13. 23. 46. 2 ²	13. 17. 46 ³¹	46 ¹⁵	— 0 ¹⁶	98. 13. 11 ⁶¹	10 ⁹⁰	— 0 ⁷¹
	14. 23. 45. 48 ⁸	13. 21. 29 ⁴⁴	29 ³²	— 0 ¹²	98. 35. 30 ⁰¹	27 ⁷⁰	— 2 ³¹
	17. 23. 45. 12 ³	13. 32. 42 ⁴²	42 ²⁶	— 0 ¹⁶	99. 41. 35 ⁵²	32 ¹⁰	— 3 ⁴²
	21. 23. 44. 32 ⁰	13. 47. 48 ²⁹	48 ²⁸	— 0 ⁰¹	101. 7. 38 ⁸³	38 ⁴⁰	— 0 ⁴³
	25. 23. 44. 3 ²	14. 3. 5 ⁶¹	5 ⁴³	— 0 ¹⁸	102. 31. 7 ³¹	5 ⁹⁰	— 1 ⁴¹
	27. 23. 43. 53 ¹	14. 10. 48 ⁵⁸	48 ⁴⁸	— 0 ¹⁰	103. 11. 43 ⁰⁵	42 ⁴⁰	— 0 ⁶⁵
	30. 23. 43. 43 ⁹	14. 22. 29 ⁰⁷	28 ⁸⁹	— 0 ¹⁸	....	...	...
	31. 23. 43. 42 ⁴	14. 26. 24 ¹¹	23 ⁹⁴	— 0 ¹⁷	104. 30. 24 ²²	23 ⁷⁰	— 0 ⁵²
Nov.	3. 23. 43. 43 ⁰	14. 38. 14 ³⁴	13 ⁹⁵	— 0 ³⁹	105. 26. 60 ⁴²	58 ⁷⁰	— 1 ⁷²
	8. 23. 43. 59 ⁵	14. 58. 13 ⁶⁶	13 ⁶²	— 0 ⁰⁴	106. 56. 5 ⁵⁹	4 ⁴⁰	— 1 ¹⁹
	15. 23. 44. 57 ⁸	15. 26. 48 ⁰³	48 ¹⁴	+ 0 ¹¹	108. 48. 25 ⁷³	26 ⁵⁰	+ 0 ⁷⁷
	16. 23. 45. 9 ⁸	15. 30. 56 ⁶⁵	56 ⁴⁴	— 0 ²¹	109. 3. 13 ³⁸	12 ⁴⁰	— 0 ⁹⁸
	17. 23. 45. 22 ²	15. 35. 5 ⁶³	5 ⁵⁸	— 0 ⁰⁵	109. 17. 40 ⁸²	37 ⁸⁰	— 3 ⁰²
	18. 23. 45. 35 ⁷	15. 39. 15 ⁶⁸	15 ⁵⁵	— 0 ¹³	109. 31. 42 ⁸¹	42 ⁴⁰	— 0 ⁴¹
	20. 23. 46. 5 ⁰	15. 47. 38 ¹⁷	38 ⁰⁰	— 0 ¹⁷	109. 58. 48 ⁷⁹	48 ⁰⁰	— 0 ⁷⁹
	22. 23. 46. 37 ⁴	15. 56. 3 ⁷⁴	3 ⁷³	— 0 ⁰¹	110. 24. 24 ⁷⁴	26 ⁰⁰	+ 1 ²⁶
	30. 23. 49. 18 ³	16. 30. 17 ⁶⁰	17 ³⁰	— 0 ³⁰	111. 51. 29 ⁴⁷	28 ¹⁰	— 1 ³⁷
Dec.	1. 23. 49. 41 ⁴	16. 34. 37 ³⁰	37 ¹²	— 0 ¹⁸	112. 0. 33 ⁰²	30 ⁷⁰	— 2 ³²
	13. 23. 54. 59 ¹	....	...	...	113. 14. 45 ³⁸	43 ⁸⁰	— 1 ⁵⁸
	15. 23. 55. 57 ³	17. 36. 6 ⁰²	5 ⁹⁴	— 0 ⁰⁸	113. 20. 45 ⁹²	43 ³⁰	— 2 ⁶²
	27. 0. 1. 25 ⁵	18. 24. 57 ³¹	57 ²⁷	— 0 ⁰⁴	113. 20. 8 ⁵³	6 ⁷⁰	— 1 ⁸³
	28. 0. 1. 55 ²	18. 29. 23 ⁶²	23 ⁵⁵	— 0 ⁰⁷	113. 17. 14 ³³	13 ⁸⁰	— 0 ⁵³
	29. 0. 2. 24 ⁶	18. 33. 49 ⁷²	49 ⁶⁵	— 0 ⁰⁷	113. 13. 53 ⁶¹	52 ⁹⁰	— 0 ⁷¹
	31. 0. 3. 22 ⁹	18. 42. 41 ²⁴	41 ¹²	— 0 ¹²	113. 5. 47 ⁶²	47 ⁴⁰	— 0 ²²

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the MOON'S CENTER.

Jan.	3. 19. 10. 46 ³	14. 6. 0 ⁰⁵	0 ⁵³	+ 0 ⁴⁸	98. 5. 33 ⁷⁹	37 ¹⁰	+ 3 ³¹
	4. 20. 3. 1 ⁹	15. 2. 20 ⁷³	20 ⁹⁶	+ 0 ²³	103. 33. 56 ⁴⁹	61 ⁷⁰	+ 5 ²¹
	15. 5. 0. 20 ²	0. 40. 32 ⁹²	33 ¹¹	+ 0 ¹⁹	91. 13. 43 ⁹³	43 ⁰⁰	— 0 ⁹³
	18. 7. 4. 35 ⁸	2. 56. 58 ⁶¹	59 ⁰³	+ 0 ⁴²	76. 51. 57 ²³	49 ⁶⁰	— 7 ⁶³
	20. 8. 34. 48 ⁸	4. 35. 19 ⁵³	19 ⁹⁹	+ 0 ⁴⁶	69. 37. 31 ⁹²	22 ⁸⁰	— 9 ¹²
	21. 9. 23. 57 ⁸	5. 28. 33 ²²	33 ³⁸	+ 0 ¹⁶	67. 15. 40 ³⁹	30 ⁷⁰	— 9 ⁶⁹
	22. 10. 15. 43 ⁵	6. 24. 23 ⁹⁶	24 ⁰¹	+ 0 ⁰⁵	66. 0. 55 ⁰⁵	46 ⁶⁰	— 8 ⁴⁵
	23. 11. 9. 20 ²	7. 22. 6 ⁰¹	6 ⁴⁵	+ 0 ⁴⁴	66. 3. 48 ⁴⁷	42 ¹⁰	— 6 ³⁷
	26. 13. 49. 45 ⁸	10. 14. 47 ⁶⁰	48 ¹³	+ 0 ⁵³	74. 14. 33 ⁹²	32 ²⁰	— 1 ⁷²
	30. 17. 8. 1 ⁵	13. 49. 22 ¹⁵	22 ⁷⁶	+ 0 ⁶¹	96. 29. 10 ²⁶	11 ⁷⁰	+ 1 ⁴⁴
	31. 17. 58. 45 ¹	14. 44. 10 ⁵⁷	11 ¹⁷	+ 0 ⁶⁰	102. 2. 29 ¹¹	39 ⁰⁰	+ 9 ⁸⁹
Feb.	14. 4. 58. 48 ⁴	2. 37. 17 ⁵¹	17 ⁷⁸	+ 0 ²⁷	78. 29. 45 ⁴¹	42 ²⁰	— 3 ²¹
	15. 5. 41. 50 ⁴	3. 24. 23 ¹⁵	23 ²⁸	+ 0 ¹³	74. 17. 23 ⁶¹	16 ³⁰	— 7 ³¹
	16. 6. 26. 51 ²	4. 13. 27 ⁹⁵	28 ³⁶	+ 0 ⁴¹	70. 43. 29 ²³	22 ⁶⁰	— 6 ⁶³

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of the MOON—*continued*.

Mean Solar Time of Observation.				R. A. from Observation.		Seconds of Tabular R. A.		Apparent Error of Tables in R. A.		N. P. D. from Observation.		Seconds of Tabular N. P. D.		Apparent Error of Tables in N. P. D.	
1853.	d	h	m	s	h	m	s	s	s	°	'	"	"	"	"
Feb.	17.	7.	14.	22.5	5.	5.	3.54	3.86	+ 0.32	67.	58.	70.64	56.20	(-14.44)	
	19.	8.	57.	0.0	6.	55.	51.08	51.33	+ 0.25	65.	44.	65.22	58.20	- 7.02	
	21.	10.	45.	13.9	8.	52.	15.87	16.20	+ 0.33	68.	48.	62.34	55.40	- 6.94	
	23.	12.	31.	21.3	10.	46.	33.80	34.12	+ 0.32	77.	2.	42.36	41.00	- 1.36	
	27.	15.	54.	53.0	14.	26.	25.14	25.68	+ 0.54	100.	33.	37.96	43.10	+ 5.14	
	28.	16.	47.	59.8	15.	23.	37.16	37.84	+ 0.68	105.	46.	31.59	38.70	+ 7.11	
Mar.	18.	6.	45.	52.4	6.	30.	48.85	48.87	+ 0.02	65.	33.	63.50	54.90	- 8.60	
	19.	7.	38.	17.5	7.	27.	19.09	19.21	+ 0.12	65.	48.	32.80	23.20	- 9.60	
	20.	8.	31.	34.5	8.	24.	41.45	41.57	+ 0.12	67.	23.	60.25	51.70	- 8.55	
	22.	10.	17.	33.5	10.	18.	50.91	50.84	- 0.07	74.	31.	23.77	16.50	- 7.27	
	23.	11.	9.	28.2	11.	14.	50.72	50.76	+ 0.04	79.	44.	37.03	31.90	- 5.13	
	24.	12.	0.	53.3	12.	10.	20.78	21.23	+ 0.45	85.	42.	10.58	10.30	- 0.28	
	25.	12.	52.	27.7	13.	6.	0.23	0.72	+ 0.49	92.	1.	49.21	51.20	+ 1.99	
	26.	13.	45.	0.0	14.	2.	37.72	38.32	+ 0.60	98.	18.	1.78	3.70	+ 1.92	
	27.	14.	39.	16.7	15.	0.	59.85	60.56	+ 0.71	104.	3.	36.53	44.10	+ 7.57	
	28.	15.	35.	45.0	16.	1.	33.98	34.50	+ 0.52	108.	52.	24.32	33.30	+ 8.98	
	29.	16.	34.	14.7	17.	4.	9.89	10.29	+ 0.40	112.	21.	43.52	52.10	+ 8.58	
	30.	17.	33.	49.0	18.	7.	50.55	51.15	+ 0.60	114.	16.	6.09	15.50	+ 9.41	
	31.	18.	32.	55.4	19.	11.	3.13	3.78	+ 0.65	114.	30.	24.17	27.00	+ 2.83	
April	1.	19.	29.	56.5	20.	12.	10.19	10.61	+ 0.42	113.	9.	46.65	59.10	+ 12.45	
	17.	7.	13.	21.7	8.	56.	39.28	39.58	+ 0.30	68.	38.	33.31	23.70	- 9.61	
	20.	9.	46.	27.9	11.	42.	0.29	0.33	+ 0.04	82.	28.	16.14	9.10	- 7.04	
	23.	12.	23.	41.2	14.	31.	29.05	29.79	+ 0.74	101.	20.	29.39	32.50	+ 3.11	
	25.	14.	20.	27.3	16.	36.	27.41	28.12	+ 0.71	....	....	....	....	....
	26.	15.	22.	9.8	17.	42.	16.60	17.31	+ 0.71	113.	54.	21.71	26.70	+ 4.99	
	27.	16.	23.	58.2	18.	48.	11.76	12.41	+ 0.65	114.	49.	41.74	46.30	+ 4.56	
May	14.	5.	6.	50.1	8.	36.	13.85	14.33	+ 0.48	67.	28.	30.80	25.20	- 5.60	
	16.	6.	46.	53.4	10.	24.	26.69	27.03	+ 0.34	74.	39.	6.61	2.60	- 4.01	
	18.	8.	24.	49.2	12.	10.	31.74	32.04	+ 0.30	85.	31.	4.13	1.10	- 3.03	
	19.	9.	14.	44.7	13.	4.	31.96	32.17	+ 0.21	91.	45.	16.99	14.70	- 2.29	
	20.	10.	6.	42.8	14.	0.	35.17	35.60	+ 0.43	98.	4.	47.05	45.40	- 1.65	
	21.	11.	1.	46.3	14.	59.	44.29	44.71	+ 0.42	104.	2.	39.49	43.00	+ 3.51	
	22.	12.	0.	31.4	16.	2.	35.54	36.46	+ 0.92	109.	7.	45.69	52.10	+ 6.41	
	23.	13.	2.	40.5	17.	8.	51.39	52.33	+ 0.94	112.	48.	48.34	56.80	+ 8.46	
	25.	15.	9.	54.2	19.	24.	19.11	20.20	+ 1.09	114.	40.	38.30	41.60	+ 3.30	
	26.	16.	9.	59.8	20.	28.	31.20	31.89	+ 0.69	112.	53.	15.23	19.10	+ 3.87	
June	11.	3.	53.	49.4	9.	13.	24.80	25.49	+ 0.69	....	....	....	....	....
	14.	6.	18.	19.1	11.	50.	7.92	8.35	+ 0.43	83.	11.	7.13	7.50	+ 0.37	
	16.	7.	55.	2.1	13.	34.	59.86	60.18	+ 0.32	95.	13.	0.94	2.40	+ 1.46	
	17.	8.	46.	43.3	14.	30.	46.11	46.46	+ 0.35	101.	13.	31.63	34.60	+ 2.97	
	18.	9.	42.	6.3	15.	30.	14.74	14.95	+ 0.21	106.	41.	4.04	6.50	+ 2.46	
	19.	10.	41.	40.1	16.	33.	54.88	55.18	+ 0.30	....	....	....	....	....
	21.	12.	49.	24.3	18.	49.	53.20	53.96	+ 0.76	114.	55.	53.37	60.80	+ 7.43	
	23.	14.	52.	10.9	21.	0.	53.13	54.16	+ 1.03	111.	20.	23.35	16.40	- 6.95	
	28.	18.	47.	9.6	1.	16.	13.25	13.58	+ 0.33	86.	54.	18.40	12.60	- 5.80	
July	11.	4.	16.	9.6	11.	34.	5.42	6.33	+ 0.91	81.	31.	8.58	11.40	+ 2.82	
	12.	5.	2.	50.3	12.	24.	50.34	51.01	+ 0.67	87.	12.	38.95	40.20	+ 1.25	
	15.	7.	31.	2.7	15.	5.	16.71	16.86	+ 0.15	104.	36.	49.42	52.00	+ 2.58	
	17.	9.	26.	39.7	17.	9.	5.85	5.87	+ 0.02	112.	51.	37.63	46.60	+ 8.97	
	19.	11.	33.	4.5	19.	23.	44.47	45.24	+ 0.77	114.	40.	27.43	35.40	+ 7.97	
	22.	14.	25.	21.5	22.	28.	19.44	20.74	+ 1.30	104.	56.	26.62	28.70	+ 2.08	
	24.	15.	59.	18.1	0.	10.	24.66	25.73	+ 1.07	94.	22.	35.18	34.60	- 0.58	
	28.	18.	49.	22.4	3.	16.	43.13	43.59	+ 0.46	74.	18.	13.27	5.40	- 7.87	
Aug.	9.	3.	48.	15.2	13.	0.	26.53	27.68	+ 1.15	91.	32.	6.25	8.50	+ 2.25	
	10.	4.	36.	21.7	13.	52.	37.52	38.47	+ 0.95	97.	28.	49.49	49.80	+ 0.31	
	11.	5.	26.	33.3	14.	46.	53.93	54.75	+ 0.82	103.	6.	10.35	9.90	- 0.45	
	13.	7.	16.	36.3	16.	45.	8.12	8.76	+ 0.64	111.	54.	26.37	26.60	+ 0.23	
	17.	11.	18.	9.8	21.	3.	7.50	8.82	+ 1.32	111.	8.	46.59	49.90	+ 3.31	
	18.	12.	12.	52.6	22.	1.	55.78	57.03	+ 1.25	107.	6.	13.68	13.40	- 0.28	

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of the MOON—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	° ' "	"	"
Aug. 23. 16. 0. 41.1	2. 10. 4.52	5.09	+ 0.57	80. 31. 6.14	2.40	— 3.74
24. 16. 43. 40.0	2. 57. 7.07	7.66	+ 0.59	75. 48. 48.43	46.50	— 1.93
25. 17. 27. 54.7	3. 45. 25.54	25.87	+ 0.33	71. 44. 52.49	47.60	— 4.89
26. 18. 13. 59.9	4. 35. 34.87	35.05	+ 0.18	68. 28. 54.04	49.50	— 4.54
27. 19. 2. 11.8	5. 27. 51.28	51.53	+ 0.25	66. 10. 56.49	49.90	— 6.59
Sept. 10. 6. 10. 17.9	17. 29. 2.28	2.40	+ 0.12	113. 58. 58.19	59.30	+ 1.11
11. 7. 10. 35.8	18. 33. 26.68	26.79	+ 0.11	....	...	...
13. 9. 8. 59.8	20. 40. 3.21	4.07	+ 0.86	112. 28. 46.53	43.60	— 2.93
16. 11. 42. 51.5	23. 26. 9.94	11.40	+ 1.46	99. 5. 16.83	9.10	— 7.73
17. 12. 28. 4.2	0. 15. 26.56	27.89	+ 1.33	93. 30. 67.95	58.10	— 9.85
18. 13. 11. 37.3	1. 3. 3.29	4.57	+ 1.28	87. 54. 37.23	29.00	— 8.23
20. 14. 37. 29.5	2. 37. 2.74	3.92	+ 1.18	77. 30. 19.82	16.70	— 3.12
21. 15. 21. 28.5	3. 25. 5.58	6.12	+ 0.54	73. 5. 55.06	52.30	— 2.76
23. 16. 54. 21.3	5. 6. 6.74	6.57	— 0.17	66. 43. 61.92	58.20	— 3.72
25. 18. 34. 10.5	6. 54. 5.42	5.55	+ 0.13	64. 39. 15.05	9.20	— 5.85
Oct. 9. 6. 5. 47.8	19. 18. 51.49	52.07	+ 0.58	115. 14. 4.63	10.70	+ 6.07
14. 10. 23. 58.6	23. 57. 27.51	28.53	+ 1.02	95. 38. 55.76	49.80	— 5.96
15. 11. 7. 21.3	0. 44. 53.86	54.80	+ 0.94	90. 2. 58.65	51.40	— 7.25
16. 11. 49. 56.0	1. 31. 32.27	33.36	+ 1.09	84. 31. 66.11	59.50	— 6.61
18. 13. 16. 9.9	3. 5. 53.28	54.03	+ 0.75	74. 37. 11.38	4.40	— 6.98
20. 14. 47. 53.8	4. 45. 45.37	45.58	+ 0.21	67. 28. 43.31	39.80	— 3.51
23. 17. 16. 49.8	7. 26. 55.45	55.23	— 0.22	64. 46. 32.33	28.00	— 4.33
24. 18. 7. 21.0	8. 21. 31.55	32.22	+ 0.67	66. 21. 52.34	48.40	— 3.94
25. 18. 57. 14.7	9. 15. 29.96	30.57	+ 0.61	69. 10. 48.82	46.80	— 2.02
26. 19. 46. 13.2	10. 8. 33.07	34.49	+ 1.42	73. 7. 27.61	28.10	+ 0.49
Nov. 9. 7. 37. 30.2	22. 53. 2.20	3.22	+ 1.02	102. 48. 6.50	6.70	+ 0.20
10. 8. 22. 55.1	23. 42. 31.11	31.72	+ 0.61	97. 28. 61.31	58.50	— 2.81
11. 9. 6. 7.5	0. 29. 47.14	47.74	+ 0.60	91. 56. 46.39	44.00	— 2.39
13. 10. 30. 14.4	....	...	...	81. 6. 38.23	32.00	— 6.23
14. 11. 13. 1.2	2. 48. 51.37	52.10	+ 0.73	....	...	...
16. 12. 43. 19.3	4. 27. 17.41	18.31	+ 0.90	68. 25. 56.61	50.70	— 5.91
17. 13. 31. 17.4	5. 19. 19.95	20.47	+ 0.52	65. 55. 30.13	26.60	— 3.53
18. 14. 20. 46.2	6. 12. 53.44	53.80	+ 0.36	64. 33. 4.92	2.20	— 2.72
19. 15. 11. 2.6	7. 7. 14.64	14.86	+ 0.22	64. 24. 25.29	25.20	— 0.09
20. 16. 1. 14.4	8. 1. 31.27	31.30	+ 0.03	65. 31. 15.34	12.20	— 3.14
21. 16. 50. 36.8	8. 54. 58.29	58.53	+ 0.24	67. 50. 49.51	45.60	— 3.91
Dec. 8. 7. 5. 24.3	0. 15. 11.17	11.87	+ 0.70	93. 43. 52.79	47.10	— 5.69
12. 9. 55. 1.8	3. 21. 2.71	2.93	+ 0.22	73. 16. 17.39	12.40	— 4.99
25. 20. 15. 17.9	14. 34. 15.99	16.44	+ 0.45	102. 20. 50.53	55.30	+ 4.77

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

Mar. 26. 1. 8. 50.0	1. 24. 23.46	23.52	+ 0.06	78. 3. 54.51	50.70	— 3.81
29. 1. 2. 1.0	1. 29. 23.07	22.25	— 0.82	77. 14. 4.29	2.10	— 2.19
30. 0. 58. 52.4	1. 30. 10.46	9.96	— 0.50	77. 5. 11.15	8.30	— 2.85
May 13. 22. 20. 47.2	1. 49. 4.28	4.02	— 0.26	82. 7. 58.81	64.80	+ 5.99
17. 22. 24. 37.1	2. 8. 41.02	41.07	+ 0.05	80. 7. 46.31	50.10	+ 3.79
July 12. 1. 50. 24.1	9. 11. 52.54	52.56	+ 0.02	73. 10. 36.61	39.10	+ 2.49
Sept. 5. 22. 52. 6.2	9. 53. 52.42	52.69	+ 0.27	76. 34. 6.86	2.90	— 3.96
13. 23. 9. 31.6	10. 42. 53.15	53.36	+ 0.21	80. 0. 53.97	52.50	— 1.47
18. 23. 24. 3.1	11. 17. 9.73	10.08	+ 0.35	83. 23. 30.15	30.80	+ 0.65

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	° ' "	"	"
Jan. 4. 21. 50. 27.4	16. 50. 3.87	3.25	— 0.62	111. 9. 7.26	6.60	— 0.66
10. 21. 58. 31.5	17. 21. 48.66	47.95	— 0.71	112. 5. 37.20	35.40	— 1.80
12. 22. 1. 18.4	17. 32. 29.17	28.57	— 0.60	112. 19. 20.08	19.00	— 1.08
Feb. 1. 22. 29. 58.2	19. 20. 4.80	4.28	— 0.52	112. 7. 25.04	26.40	+ 1.36
18. 22. 51. 55.5	20. 49. 7.15	6.76	— 0.39	108. 29. 42.95	43.60	+ 0.65
20. 22. 54. 11.4	20. 59. 16.50	16.38	— 0.12	107. 53. 6.49	6.10	— 0.39
Mar. 25. 23. 21. 50.6	23. 37. 6.50	6.35	— 0.15	94. 3. 61.47	59.40	— 2.07
28. 23. 23. 41.6	23. 50. 47.48	47.51	+ 0.03	92. 35. 53.51	52.10	— 1.41
29. 23. 24. 18.1	23. 55. 20.61	20.62	+ 0.01	92. 6. 20.46	19.00	— 1.46
30. 23. 24. 54.6	23. 59. 53.76	53.48	— 0.28	91. 36. 44.67	41.80	— 2.87
June 7. 0. 27. 6.7	5. 30. 21.90	22.30	+ 0.40	66. 17. 39.06	38.30	— 0.76
8. 0. 28. 31.7	5. 35. 43.64	43.89	+ 0.25	66. 11. 55.05	53.00	— 2.05
24. 0. 51. 24.8	7. 1. 45.40	45.52	+ 0.12	66. 16. 34.56	33.60	— 0.96
July 12. 1. 14. 28.7	8. 35. 51.21	51.13	— 0.08	69. 52. 26.44	27.00	+ 0.56
23. 1. 25. 37.3	9. 30. 23.70	23.44	— 0.26	73. 37. 22.79	23.30	+ 0.51
Aug. 12. 1. 39. 57.3	11. 3. 37.26	37.48	+ 0.22	82. 30. 56.07	54.50	— 1.57
30. 1. 48. 47.5	12. 23. 26.83	26.51	— 0.32	91. 41. 4.99	7.00	+ 2.01
Sept. 17. 1. 57. 42.2	13. 43. 20.94	20.42	— 0.52	100. 46. 33.60	30.60	— 3.00
19. 1. 58. 51.7	13. 52. 23.76	23.33	— 0.43	101. 43. 51.01	47.70	— 3.31
21. 2. 0. 4.5	14. 1. 29.91	29.35	— 0.56	102. 40. 7.14	3.80	— 3.34
Oct. 26. 2. 32. 0.7	16. 51. 31.34	30.76	— 0.58	114. 37. 48.31	45.80	— 2.51
Nov. 17. 2. 58. 27.8	18. 44. 46.39	45.90	— 0.49	115. 45. 59.67	58.70	— 0.97
18. 2. 59. 34.2	18. 49. 49.50	49.21	— 0.29	115. 40. 57.11	55.50	— 1.61
19. 3. 0. 39.6	18. 54. 51.64	51.41	— 0.23	115. 35. 12.60	11.00	— 1.60
21. 3. 2. 47.2	19. 4. 52.67	52.23	— 0.44	115. 21. 41.01	39.30	— 1.71
22. 3. 3. 49.0	19. 9. 51.19	50.71	— 0.48	115. 13. 53.24	52.90	— 0.34
25. 3. 6. 45.5	19. 24. 37.84	37.61	— 0.23	114. 46. 39.16	37.10	— 2.06
Dec. 2. 3. 12. 39.9	19. 58. 9.18	8.89	— 0.29	113. 21. 11.51	8.70	— 2.81
16. 3. 19. 15.1	20. 59. 57.23	57.10	— 0.13	109. 11. 58.85	56.30	— 2.55
23. 3. 19. 22.6	21. 27. 40.66	40.54	— 0.12	106. 37. 43.84	41.40	— 2.44
29. 3. 17. 34.0	21. 49. 31.12	30.96	— 0.16	104. 15. 5.48	3.40	— 2.08

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

Nov. 14. 18. 31. 15.1	10. 8. 17.23	16.76	— 0.47	76. 27. 43.17	31.50	— 11.67
16. 18. 27. 2.4	10. 11. 56.97	56.49	— 0.48	76. 45. 16.18	3.00	— 13.18
18. 18. 22. 46.0	10. 15. 32.96	32.38	— 0.58	77. 2. 35.76	23.10	— 12.66
20. 18. 18. 25.4	10. 19. 4.80	4.32	— 0.48	77. 19. 43.68	30.10	— 13.58
23. 18. 11. 47.1	10. 24. 15.08	14.58	— 0.50	77. 44. 56.05	42.80	— 13.25
Dec. 1. 17. 53. 16.7	10. 37. 14.06	13.48	— 0.58	78. 48. 40.67	28.00	— 12.67
2. 17. 50. 52.4	10. 38. 45.98	45.54	— 0.44	78. 56. 13.29	0.60	— 12.69
14. 17. 20. 21.2	10. 55. 28.41	27.81	— 0.60	80. 17. 21.93	8.60	— 13.33
25. 16. 49. 12.0	11. 7. 36.20	35.36	— 0.84	81. 12. 30.41	17.40	— 13.01
27. 16. 43. 8.7	11. 9. 25.07	24.44	— 0.63	81. 19. 66.73	51.30	— 15.43
28. 16. 40. 4.4	11. 10. 16.85	16.03	— 0.82	81. 23. 36.83	19.10	— 17.73
30. 16. 33. 49.3	11. 11. 53.81	53.12	— 0.69	81. 29. 51.38	35.30	— 16.08

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FLORA.						
Mean Solar Time of Observation.	R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	o ' "	"	"
Aug. 9. 11. 5. 32.4	20. 18. 55.58	56.19	+ 0.61	113. 17. 51.74	50.40	- 1.34
10. 11. 0. 38.3	20. 17. 57.20	57.86	+ 0.66	113. 24. 7.58	6.00	- 1.58
18. 10. 22. 8.9	20. 10. 53.97	....	....	114. 8. 54.61	....	....
Sept. 10. 8. 42. 22.0	20. 1. 31.40	....	....	115. 18. 35.65	....	....
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VICTORIA.						
April 27. 11. 54. 51.2	14. 18. 20.53	5.93	-14.60	108. 48. 81.18	30.70	-50.48
May 5. 11. 15. 55.1	14. 10. 50.49	35.92	-14.57	107. 30. 70.79	21.80	-48.99
11. 10. 47. 3.3	14. 5. 33.28	19.00	-14.28	106. 29. 83.24	33.80	-49.44
14. 10. 32. 50.3	14. 2. 67.63	53.51	-14.12	105. 59. 69.02	21.90	-47.12
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of EUTERPE.						
Nov. 9. 12. 2. 7.9	3. 18. 23.30	...	...	73. 58. 55.22	...	...
10. 11. 57. 12.0	3. 17. 23.18	...	...	74. 2. 2.16	...	...
16. 11. 27. 32.6	3. 11. 18.28	...	...	74. 20. 30.96	...	...
17. 11. 22. 36.7	3. 10. 18.08	...	...	74. 23. 31.38	...	...
18. 11. 17. 41.1	3. 9. 18.27	...	...	74. 26. 28.88	...	...
19. 11. 13. 46.0	3. 8. 18.84	...	...	74. 29. 26.64	...	...
21. 11. 2. 57.1	3. 6. 21.53	...	...	74. 35. 1.38	...	...
23. 10. 53. 11.8	3. 4. 27.66	...	...	74. 40. 23.38	...	...
Dec. 2. 10. 10. 17.4	2. 56. 55.26	...	...	75. 0. 3.22	...	...
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.						
Jan. 3. 7. 25. 16.6	2. 18. 34.48	35.84	+ 1.36	83. 10. 52.36	59.30	+ 6.94
6. 7. 14. 23.5	2. 19. 29.24	30.56	+ 1.32	82. 53. 52.39	58.10	+ 5.71
7. 7. 10. 48.8	2. 19. 50.49	51.73	+ 1.24	82. 47. 59.16	66.50	+ 7.34
8. 7. 7. 15.4	2. 20. 13.12	14.34	+ 1.22	82. 42. 2.66	9.40	+ 6.74
11. 6. 56. 43.5	2. 21. 29.15	30.62	+ 1.47	82. 23. 40.50	47.60	+ 7.10
20. 6. 26. 20.8	2. 26. 30.48	31.60	+ 1.12	81. 24. 35.84	41.20	+ 5.36
22. 6. 19. 49.4	2. 27. 51.08	52.21	+ 1.13	81. 10. 45.26	51.60	+ 6.34
Dec. 1. 17. 57. 46.0	10. 41. 44.10	46.05	+ 1.95	77. 24. 27.29	44.70	+ 17.41
2. 17. 54. 49.2	10. 42. 43.36	45.33	+ 1.97	77. 26. 43.86	65.20	+ 21.34
25. 16. 41. 58.4	11. 0. 21.47	23.54	+ 2.07	77. 40. 52.00	72.00	+ 20.00
30. 16. 24. 37.2	11. 2. 40.24	42.85	+ 2.61	77. 32. 7.56	28.80	+ 21.24
RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRIS.						
Mar. 12. 12. 41. 1.6	12. 3. 17.03	16.74	- 0.29	99. 29. 44.52	32.40	-12.12
18. 12. 11. 51.3	11. 57. 40.86	40.58	- 0.28	98. 54. 5.16	0.70	- 4.46
19. 12. 6. 59.2	11. 56. 44.91	44.27	- 0.64	98. 47. 47.62	42.70	- 4.92
22. 11. 52. 23.5	11. 53. 56.49	56.12	- 0.37	98. 28. 22.03	18.10	- 3.93
23. 11. 47. 32.2	11. 53. 1.00	0.53	- 0.47	98. 21. 44.33	41.00	- 3.33
24. 11. 42. 41.0	11. 52. 5.56	5.26	- 0.30	98. 15. 2.50	0.20	- 2.30
26. 11. 33. 0.2	11. 50. 16.27	15.92	- 0.35	98. 1. 34.29	29.50	- 4.79
29. 11. 18. 32.8	11. 47. 36.09	35.76	- 0.33	97. 40. 59.20	56.40	- 2.80
April 1. 11. 4. 11.3	11. 45. 1.94	1.52	- 0.42	97. 20. 19.09	13.90	- 5.19
7. 10. 35. 51.1	11. 40. 16.41	16.18	- 0.23	96. 39. 12.37	7.40	- 4.97
30. 8. 54. 3.6	11. 28. 52.90	....	....	94. 27. 37.08	....	....

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of METIS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	° ' "	"	"
Aug. 29. 15. 1. 18.9	1. 34. 11.90	....	....	88. 46. 24.12	....	....
Sept. 10. 14. 10. 55.8	1. 30. 59.15	....	....	89. 22. 59.17	....	....
20. 13. 26. 35.0	1. 25. 56.57	....	....	90. 1. 36.94	....	....
23. 13. 12. 37.7	1. 23. 46.63	46.36	— 0.27	90. 14. 53.57	54.90	+ 1.33
26. 12. 58. 28.3	1. 21. 24.59	24.25	— 0.34	90. 28. 22.99	25.40	+ 2.41
Oct. 1. 12. 34. 29.7	1. 17. 4.85	4.67	— 0.18	90. 50. 51.29	55.10	+ 3.81
3. 12. 24. 48.3	1. 15. 14.95	14.51	— 0.44	90. 59. 41.02	42.90	+ 1.88
5. 12. 15. 3.7	1. 13. 21.89	21.63	— 0.26	91. 8. 16.26	17.80	+ 1.54
8. 12. 0. 23.7	1. 10. 29.07	28.75	— 0.32	91. 20. 31.41	36.40	+ 4.99
18. 11. 11. 26.6	1. 0. 49.53	49.16	— 0.37	91. 54. 12.66	15.30	+ 2.64
20. 11. 1. 43.6	0. 58. 57.96	57.61	— 0.35	91. 59. 11.34	13.20	+ 1.86
25. 10. 37. 40.1	0. 54. 33.31	...	...	92. 8. 28.18	...	...
Nov. 1. 10. 4. 46.7	0. 49. 10.42	...	...	92. 13. 13.72	...	...
3. 9. 55. 35.8	0. 47. 51.08	...	...	92. 12. 38.94	...	...
8. 9. 33. 7.3	0. 45. 1.74	...	...	92. 7. 28.91	...	...
9. 9. 28. 43.0	0. 44. 33.21	...	...	92. 5. 48.53	...	...
19. 8. 46. 20.2	0. 41. 29.06	...	...	91. 37. 28.21	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HEBE.

Jan. 15. 12. 30. 27.2	8. 11. 53.86	53.58	— 0.28	78. 13. 43.64	46.90	+ 3.26
31. 11. 11. 50.3	7. 56. 8.96	8.49	— 0.47	75. 40. 15.74	17.90	+ 2.16
Feb. 19. 9. 43. 50.2	7. 42. 48.90	...	...	72. 51. 23.49	...	...
23. 9. 26. 32.2	7. 41. 14.29	...	...	72. 20. 46.39	...	...
28. 9. 5. 34.9	7. 39. 56.31	...	...	71. 45. 26.97	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of THETIS.

Sept. 6. 12. 19. (40)				100. 43. 53.10		
12. 11. 50. 43.6	23. 18. 17.05	...	...	101. 27. 44.53	...	...
13. 11. 46. 2.3	23. 17. 31.47	...	...	101. 34. 30.37	...	...
19. 11. 17. 27.7	23. 12. 31.58	...	...	102. 13. 9.62	...	...
23. 10. 58. 36.7	23. 9. 23.63	...	...	102. 35. 42.40	...	...
24. 10. 53. 54.1	23. 8. 36.79	...	...	102. 40. 44.65	...	...
26. 10. 44. 38.1	23. 7. 12.43	...	...	102. 50. 41.02	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of ASTREA.

Sept. 26. 14. 11. 54.3	2. 35. 2.68	...	...	82. 24. 7.61	...	...
Oct. 5. 13. 31. 48.5	2. 30. 19.23	19.54	+ 0.31	83. 11. 51.80	46.90	— 4.90
8. 13. 18. 2.4	2. 28. 20.60	20.83	+ 0.23	83. 28. 55.74	55.89	+ 0.15
18. 12. 31. 0.0	2. 20. 35.97	35.67	— 0.30	84. 28. 13.29	10.41	— 2.88
20. 12. 21. 25.2	2. 18. 52.68	52.73	+ 0.05	84. 40. 4.07	3.24	— 0.83
24. 12. 2. 9.8	2. 15. 20.32	20.44	+ 0.12	85. 3. 29.07	26.92	— 2.15
25. 11. 57. 20.3	2. 14. 26.60	26.39	— 0.21	85. 9. 9.75	10.87	+ 1.12

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of ASTREA—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	° ' "	"	"
Nov. 1. 11. 23. 27.9	2. 8. 4.52	4.74	+ 0.22	85. 47. 17.96	14.81	— 3.15
3. 11. 13. 48.3	2. 6. 16.46	16.71	+ 0.25	85. 57. 17.31	15.30	— 2.01
5. 11. 4. 10.1	2. 4. 29.81	30.15	+ 0.34	86. 6. 50.97	47.01	— 3.96
8. 10. 49. 46.8	2. 1. 53.79	54.24	+ 0.45	86. 20. 5.48	4.42	— 1.06
9. 10. 45. 0.8	2. 1. 3.53	3.57	+ 0.04	86. 24. 18.19	13.00	— 5.19
19. 9. 58. 6.1	1. 53. 26.75	26.86	+ 0.11	86. 56. 44.90	41.28	— 3.62
21. 9. 48. 55.8	1. 52. 8.00	8.93	+ 0.93	87. 1. 12.70	3.99	— 8.71
23. 9. 39. 51.7	1. 50. 55.57	56.27	+ 0.70	87. 4. 37.02	41.71	+ 4.69

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRENE.

Oct. 24. 14. 27. 49.7	4. 41. 24.21	...	...	74. 15. 7.29	...	...
Nov. 1. 13. 51. 52.5	4. 36. 53.51	...	...	74. 17. 9.45	...	...
3. 13. 42. 37.9	4. 35. 30.50	...	...	74. 17. 36.91	...	...
8. 13. 19. 7.0	4. 31. 38.49	...	...	74. 18. 46.11	...	...
17. 12. 35. 34.1	4. 23. 27.50	...	...	74. 20. 7.24	...	...
19. 12. 25. 43.7	4. 21. 28.62	...	...	74. 20. 14.54	...	...
21. 12. 15. 50.8	4. 19. 27.16	...	...	74. 20. 13.07	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of THALIA.

Jan. 15. 7. 26. 57.6	3. 7. 34.37	35.66	+ 1.29	70. 41. 54.06	57.42	+ 3.36
20. 7. 9. 44.5	3. 10. 1.27	2.62	+ 1.35	70. 10. 41.66	45.88	+ 4.22

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES.

Mar. 23. 14. 55. 10.5	15. 1. 10.05	20.19	+ 10.14	94. 32. 46.97	110.80	+ 63.83
24. 14. 50. 55.2	15. 0. 50.62	61.01	+ 10.39	94. 30. 17.83	81.50	+ 63.67
26. 14. 42. 20.4	15. 0. 7.56	17.99	+ 10.43	94. 25. 12.84	76.20	+ 63.36
29. 14. 29. 16.6	14. 58. 51.21	61.98	+ 10.77	94. 17. 19.75	84.90	+ 65.15
April 7. 13. 48. 48.3	14. 53. 45.26	56.60	+ 11.34	93. 53. 4.28	71.50	+ 67.22
27. 12. 13. 57.6	14. 37. 30.06	41.91	+ 11.85	93. 9. 13.81	83.90	+ 70.09
29. 12. 4. 18.0	14. 35. 42.00	53.67	+ 11.67	93. 6. 37.92	105.40	+ 67.48
30. 11. 59. 28.0	14. 34. 47.80	59.48	+ 11.68	93. 5. 28.93	95.90	+ 66.97
May 4. 11. 40. 9.2	14. 31. 11.96	23.66	+ 11.70	93. 2. 0.04	67.20	+ 67.16
5. 11. 35. 20.0	14. 30. 18.58	30.25	+ 11.67	93. 1. 24.77	93.30	+ 68.53
11. 11. 6. 34.5	14. 25. 7.68	19.10	+ 11.42	93. 0. 47.77	115.20	+ 67.43
14. 10. 52. 20.1	14. 22. 40.62	52.03	+ 11.41	93. 2. 27.09	87.70	+ 60.61
21. 10. 19. 37.8	14. 17. 28.85	39.99	+ 11.14	93. 10. 59.34	123.80	+ 64.46
25. 10. 1. 20.0	14. 14. 54.22	65.14	+ 10.92	93. 19. 4.85	67.80	+ 62.95
26. 9. 56. 48.1	14. 14. 18.16	29.39	+ 11.23	93. 21. 27.26	89.90	+ 62.64
June 3. 9. 21. 22.9	14. 10. 19.62	30.04	+ 10.42	93. 45. 25.42	84.50	+ 59.08
7. 9. 4. 13.2	14. 8. 53.28	63.34	+ 10.06	94. 0. 35.49	93.20	+ 57.71

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. h m s	° h s	s	s	° ' "	"	"
Mar. 21. 14. 48. 20.8	14. 46. 26.19	28.15	+ 1.96	76. 46. 47.38	75.50	+ 28.12
23. 14. 39. 51.8	14. 45. 48.89	50.87	+ 1.98	76. 8. 25.76	53.20	+ 27.44
26. 14. 26. 56.9	14. 44. 41.56	43.56	+ 2.00	75. 11. 19.64	46.60	+ 26.96
29. 14. 13. 49.1	14. 43. 21.16	23.15	+ 1.99	74. 15. 2.46	30.80	+ 28.34
April 27. 11. 59. 21.6	14. 22. 53.17	55.50	+ 2.33	67. 1. 59.54	84.30	+ 24.76
30. 11. 45. 12.7	14. 20. 30.10	32.32	+ 2.22	66. 33. 48.91	72.10	+ 23.19
May 4. 11. 26. 23.7	14. 17. 24.23	26.24	+ 2.01	66. 1. 49.53	72.80	+ 23.27
5. 11. 21. 42.5	14. 16. 38.82	40.99	+ 2.17	65. 54. 50.97	73.20	+ 22.23
11. 10. 53. 50.7	14. 12. 21.83	24.07	+ 2.24	65. 21. 14.00	36.00	+ 22.00
14. 10. 40. 6.3	14. 10. 24.83	26.97	+ 2.14	65. 9. 37.25	60.80	+ 23.55
21. 10. 8. 39.0	14. 6. 28.24	30.16	+ 1.92	64. 55. 19.34	38.60	+ 19.26
25. 9. 51. 5.8	14. 4. 38.35	40.37	+ 2.02	64. 54. 30.81	48.60	+ 17.79
June 3. 9. 12. 50.4	14. 1. 45.73	47.64	+ 1.91	65. 9. 56.15	72.40	+ 16.25
7. 8. 56. 24.7	14. 1. 3.51	5.36	+ 1.85	65. 23. 34.87	49.80	+ 14.93

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CALLIOPE.

Jan. 5. 9. 25. 53.7	4. 27. 24.48	26.72	+ 2.24	62. 35. 46.86	19.34	- 27.52
15. 8. 42. 37.0	4. 23. 26.23	27.53	+ 1.30	....	...	...
22. 8. 14. 12.8	4. 22. 33.26	33.24	- 0.02	61. 57. 50.36	59.57	+ 9.21

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HYGEIA.

Jan. 6. 8. 52. 11.3	3. 57. 33.11	4.83	- 28.28	66. 43. 53.34	107.40	+ 54.06
7. 8. 47. 56.2	3. 56. 73.83	45.16	- 28.67	66. 46. 7.02	61.28	+ 54.26
15. 8. 14. 38.5	3. 54. 83.15	56.34	- 26.81	67. 1. 49.24	100.80	+ 51.56

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

March 25. 17. 20. 5.9	17. 34. 22.42	22.28	- 0.14	112. 43. 54.52	56.50	+ 1.98
28. 17. 8. 52.2	17. 34. 56.53	56.09	- 0.44	112. 44. 12.01	16.10	+ 4.09
29. 17. 5. 5.8	17. 35. 6.09	5.80	- 0.29	112. 44. 19.73	21.70	+ 1.97
30. 17. 1. 18.2	.....	...	...	112. 44. 24.65	26.80	+ 2.15
April 1. 16. 53. 42.4	17. 35. 30.43	30.17	- 0.26	112. 44. 33.17	35.60	+ 2.43
7. 16. 30. 33.8	17. 35. 57.39	57.20	- 0.19	112. 44. 47.53	51.20	+ 3.67
18. 15. 46. 52.4	17. 35. 30.86	30.81	- 0.05	112. 44. 36.72	40.40	+ 3.68
26. 15. 14. 5.8	17. 34. 11.30	11.13	- 0.17	112. 44. 0.75	1.90	+ 1.15
27. 15. 9. 56.5	17. 33. 57.87	57.71	- 0.16	112. 43. 50.51	55.20	+ 4.69
30. 14. 57. 24.4	17. 33. 13.41	12.94	- 0.47	112. 43. 30.61	32.40	+ 1.79

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	° ' "	"	"
May 14. 13. 57. 31.1	17. 28. 22.02	21.71	— 0.31	112. 40. 45.97	47.50	+ 1.53
20. 13. 31. 15.7	17. 25. 41.64	41.58	— 0.06	112. 39. 2.34	5.80	+ 3.46
23. 13. 18. 1.9	17. 24. 15.36	15.27	— 0.09	112. 38. 3.54	7.80	+ 4.26
25. 13. 9. 10.8	17. 23. 15.96	15.74	— 0.22	112. 37. 23.77	26.50	+ 2.73
26. 13. 4. 44.6	17. 22. 45.51	45.43	— 0.08	112. 37. 2.66	5.10	+ 2.44
June 3. 12. 29. 5.2	17. 18. 32.75	32.62	— 0.13	112. 33. 50.27	55.20	+ 4.93
6. 12. 15. 39.7	17. 16. 54.74	54.56	— 0.18	112. 32. 32.04	36.40	+ 4.36
7. 12. 11. 10.8	17. 16. 21.68	21.65	— 0.03	112. 32. 6.71	9.30	+ 2.59
11. 11. 53. 15.7	17. 14. 9.78	9.64	— 0.14	112. 30. 13.20	17.80	+ 4.60
16. 11. 30. 52.7	17. 11. 25.88	25.54	— 0.34	112. 27. 49.62	53.00	+ 3.38
17. 11. 26. 24.0	17. 10. 53.06	53.07	+ 0.01	112. 27. 18.12	23.60	+ 5.48
21. 11. 8. 32.9	17. 8. 45.28	45.06	— 0.22	112. 25. 21.00	25.20	+ 4.20
23. 10. 59. 38.6	17. 7. 42.57	42.47	— 0.10	112. 24. 24.09	26.00	+ 1.91
24. 10. 55. 12.1	17. 7. 11.98	11.60	— 0.38	112. 23. 55.72	56.60	+ 0.88
29. 10. 33. 3.5	17. 4. 42.54	42.31	— 0.23	112. 21. 26.76	31.90	+ 5.14
July 5. 10. 6. 43.0	17. 1. 57.01	56.87	— 0.14	112. 18. 45.20	48.20	+ 3.00
6. 10. 2. 21.5	17. 1. 31.34	31.02	— 0.32	112. 18. 17.20	22.50	+ 5.30
12. 9. 36. 22.9	16. 59. 7.83	7.73	— 0.10	112. 15. 59.90	62.00	+ 2.10
22. 8. 53. 56.6	16. 55. 60.08	59.98	— 0.10	112. 13. 10.14	12.20	+ 2.06
25. 8. 41. 26.4	16. 55. 17.57	17.30	— 0.27	112. 12. 37.51	40.20	+ 2.69
Aug. 1. 8. 12. 41.9	16. 54. 4.22	3.95	— 0.27	112. 12. 1.58	4.20	+ 2.62
10. 7. 36. 40.8	16. 53. 26.23	25.97	— 0.26	112. 12. 41.71	44.80	+ 3.09
11. 7. 32. 44.5	16. 53. 25.80	25.73	— 0.07	112. 12. 52.25	55.50	+ 3.25

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN.

Jan. 3. 7. 44. 22.8	2. 37. 43.78	43.16	— 0.62	77. 7. 13.35	6.00	— 7.35
5. 7. 36. 23.6	2. 37. 36.42	35.87	— 0.55	77. 7. 12.31	3.80	— 8.51
6. 7. 32. 24.8	2. 37. 33.53	32.88	— 0.65	77. 6. 68.14	59.50	— 8.64
7. 7. 28. 26.6	2. 37. 31.24	30.32	— 0.92	77. 6. 61.31	53.10	— 8.21
8. 7. 24. 28.6	2. 37. 29.05	28.19	— 0.86	77. 6. 53.34	44.60	— 8.74
11. 7. 12. 36.6	2. 37. 24.78	24.45	— 0.33	77. 6. 16.18	6.40	— 9.78
13. 7. 4. 44.9	2. 37. 24.97	24.16	— 0.81	77. 5. 38.32	30.30	— 8.02
15. 6. 56. 54.4	2. 37. 26.29	25.63	— 0.66	77. 4. 54.40	45.70	— 8.70
18. 6. 45. 12.3	2. 37. 31.87	31.15	— 0.72	77. 3. 35.36	23.00	— 12.36
20. 6. 37. 26.3	2. 37. 37.78	37.01	— 0.77	77. 2. 26.60	17.60	— 9.00
22. 6. 29. 42.2	2. 37. 45.46	44.62	— 0.84	77. 1. 12.23	4.00	— 8.23
31. 5. 55. 14.0	2. 38. 40.63	40.07	— 0.56	76. 53. 62.98	54.80	— 8.18
Sept. 5. 16. 59. 39.6	4. 0. 27.95	27.78	— 0.17	71. 34. 29.94	19.70	— 10.24
13. 16. 28. 26.2	4. 0. 41.84	41.69	— 0.15	71. 35. 15.84	6.70	— 9.14
18. 16. 8. 40.6	4. 0. 35.76	35.91	+ 0.15	71. 36. 26.01	16.90	— 9.11
25. 15. 40. 42.9	4. 0. 9.33	9.11	— 0.22	71. 38. 55.34	44.80	— 10.54
Oct. 2. 15. 12. 23.3	3. 59. 20.94	20.93	— 0.01	71. 42. 19.25	9.60	— 9.65
5. 15. 0. 8.8	3. 58. 54.09	53.96	— 0.13	71. 43. 62.93	54.00	— 8.93
8. 14. 47. 50.4	3. 58. 23.32	23.36	+ 0.04	71. 45. 56.48	48.00	— 8.48
24. 13. 41. 18.5	3. 54. 45.30	45.29	— 0.01	71. 58. 25.55	14.80	— 10.75
Nov. 1. 13. 7. 33.9	3. 52. 27.60	27.46	— 0.14	72. 5. 48.24	39.30	— 8.94
3. 12. 59. 5.4	3. 51. 50.86	50.74	— 0.12	72. 7. 46.40	35.70	— 10.70
5. 12. 50. 37.0	3. 51. 13.37	13.28	— 0.09	72. 9. 43.91	33.70	— 10.21
8. 12. 37. 51.3	3. 50. 16.03	15.90	— 0.13	72. 12. 42.61	33.20	— 9.41
10. 12. 29. 20.5	3. 49. 36.98	36.98	0.00	72. 14. 40.72	33.90	— 6.82

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853. d h m s	h m s	s	s	° ' "	"	"
Nov. 17. 11. 59. 30.6	3. 47. 18.02	17.90	— 0.12	72. 21. 48.93	40.20	— 8.73
18. 11. 55. 14.7	3. 46. 58.04	57.81	— 0.23	72. 22. 49.60	41.10	— 8.50
19. 11. 50. 58.6	3. 46. 37.79	37.70	— 0.09	72. 23. 52.54	41.90	— 10.64
21. 11. 42. 26.8	3. 45. 57.63	57.46	— 0.17	72. 25. 52.90	43.10	— 9.80
23. 11. 33. 54.9	3. 45. 17.47	17.27	— 0.20	72. 27. 52.04	43.40	— 8.64
Dec. 31. 8. 53. 53.3	3. 34. 38.82	38.63	— 0.19	72. 56. 54.27	45.60	— 8.67

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of URANUS.

Jan. 3. 7. 16. 20.4	2. 9. 36.79	48.31	+ 11.52	77. 23. 66.05	9.30	— 56.75
6. 7. 4. 28.3	2. 9. 32.36	43.86	+ 11.50	77. 23. 85.57	26.70	— 58.87
7. 7. 0. 31.4	2. 9. 31.41	42.77	+ 11.36	77. 23. 87.35	30.40	— 56.95
8. 6. 56. 34.4	2. 9. 30.30	41.88	+ 11.58	77. 23. 90.05	33.00	— 57.05
18. 6. 17. 17.7	2. 9. 32.77	44.16	+ 11.39	77. 23. 58.15	1.30	— 56.85
20. 6. 9. 28.8	2. 9. 35.68	47.04	+ 11.36	77.22.100.14	42.20	— 57.94
22. 6. 1. 40.8	2. 9. 39.51	50.73	+ 11.22	77. 22. 76.63	18.90	— 57.73
Sept. 5. 15. 39. 47.3	2. 40. 22.53	35.04	+ 12.51	74. 49. 96.90	41.70	— 55.20
13. 15. 7. 45.4	2. 39. 47.73	60.37	+ 12.54	74. 52. 84.54	27.80	— 56.74
20. 14. 39. 34.8	2. 39. 8.44	21.24	+ 12.80	74. 55. 91.42	33.50	— 57.92
26. 14. 15. 20.0	2. 38. 28.90	41.70	+ 12.80	74. 58. 97.51	40.40	— 57.11
Oct. 1. 13. 55. 3.9	2. 37. 52.22	64.94	+ 12.72	75. 1. 90.62	33.80	— 56.82
5. 13. 38. 48.8	2. 37. 20.67	33.30	+ 12.63	75. 4. 62.61	3.00	— 59.61
8. 13. 26. 36.0	2. 36. 55.60	68.40	+ 12.80	75. 6. 59.59	0.40	— 59.19
18. 12. 45. 48.4	2. 35. 26.78	39.56	+ 12.78	75.12.118.28	58.90	— 59.38
20. 12. 37. 38.1	2. 35. 8.25	20.94	+ 12.69	75. 14. 84.86	26.70	— 58.16
24. 12. 21. 16.7	2. 34. 30.39	43.05	+ 12.66	75. 17. 84.68	25.20	— 59.48
25. 12. 17. 11.4	2. 34. 20.93	33.47	+ 12.54	75. 18. 69.40	10.40	— 59.00
31. 11. 52. 37.8	2. 33. 22.67	35.44	+ 12.77	75.22.103.50	44.20	— 59.30
Nov. 1. 11. 48. 32.3	2. 33. 13.05	25.71	+ 12.66	75. 23. 90.10	30.20	— 59.90
3. 11. 40. 21.1	2. 32. 53.60	66.24	+ 12.64	75. 25. 60.93	2.10	— 58.83
5. 11. 32. 9.8	2. 32. 34.12	46.79	+ 12.67	75. 26. 93.88	34.00	— 59.88
8. 11. 19. 53.2	2. 32. 5.12	17.74	+ 12.62	75.28.109.70	51.20	— 58.50
9. 11. 15. 47.8	2. 31. 55.57	68.10	+ 12.53	75. 29. 95.56	36.70	— 58.86
10. 11. 11. 42.0	2. 31. 45.75	58.49	+ 12.74	75. 30. 80.46	22.10	— 58.36
11. 11. 7. 36.6	2. 31. 36.21	48.92	+ 12.71	75. 31. 65.46	7.30	— 58.16
16. 10. 47. 10.1	2. 30. 49.07	61.73	+ 12.66	75.34.109.50	50.10	— 59.40
17. 10. 43. 4.9	2. 30. 39.81	52.45	+ 12.64	75. 35. 93.97	33.90	— 60.07
18. 10. 38. 59.8	2. 30. 30.59	43.23	+ 12.64	75. 36. 77.73	17.50	— 60.23
19. 10. 34. 54.8	2. 30. 21.51	34.07	+ 12.56	75. 37. 61.07	0.70	— 60.37
21. 10. 26. 44.9	2. 30. 3.34	15.98	+ 12.64	75. 38. 85.34	26.10	— 59.24
23. 10. 18. 35.3	2. 29. 45.53	58.20	+ 12.67	75.39.109.92	50.00	— 59.92

RIGHT ASCENSION and NORTH POLAR DISTANCES of NEPTUNE.

Aug. 6. 13. 57. 4.2	22. 59. 5.93	6.38	+ 0.45	97. 33. 21.37	18.60	— 2.77
9. 13. 45. 1.1	22. 58. 50.46	50.71	+ 0.25	97. 35. 0.30	0.50	+ 0.20
10. 13. 40. 59.8	22. 58. 45.04	45.35	+ 0.31	97. 35. 38.09	35.08	— 3.01
18. 13. 8. 47.8	22. 58. 0.21	0.68	+ 0.47	97. 40. 25.46	22.75	— 2.71
27. 12. 32. 31.7	22. 57. 7.19	7.42	+ 0.23	97. 46. 4.74	1.13	— 3.61
29. 12. 24. 27.9	22. 56. 55.09	55.32	+ 0.23	97. 47. 20.59	17.52	— 3.07
Sept. 5. 11. 56. 14.0	22. 56. 12.46	12.55	+ 0.09	97. 51. 49.49	46.00	— 3.49
6. 11. 52. 11.8	22. 56. 6.19	6.42	+ 0.23	97. 52. 26.44	24.20	— 2.24
10. 11. 36. 3.8	22. 55. 41.73	41.92	+ 0.19	97. 54. 59.11	56.80	— 2.31

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE—*concluded.*

Mean Solar Time of Observation.		R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1853.	d h m s	h m s	s	s	° ' "	"	"
Sept.	12. 11. 27. 59.9	22. 55. 29.51	29.78	+ 0.27	97. 56. 16.96	12.38	— 4.58
	13. 11. 23. 58.1	22. 55. 23.65	23.73	+ 0.08	97. 56. 51.93	49.92	— 2.01
	17. 11. 7. 50.3	22. 54. 59.46	59.73	+ 0.27	97. 59. 20.18	18.21	— 1.97
	19. 10. 59. 46.8	22. 54. 47.78	47.90	+ 0.12	98. 0. 33.09	31.07	— 2.02
	20. 10. 55. 45.0	22. 54. 41.79	42.05	+ 0.26	98. 1. 9.67	7.10	— 2.57
	23. 10. 43. 39.8	22. 54. 24.34	24.65	+ 0.31	98. 2. 56.46	53.60	— 2.86
	24. 10. 39. 38.5	22. 54. 18.91	18.94	+ 0.03	98. 3. 29.68	28.60	— 1.08
	26. 10. 31. 35.3	22. 54. 7.48	7.66	+ 0.18	98. 4. 39.59	37.30	— 2.29
	27. 10. 27. 33.9	22. 54. 2.00	2.10	+ 0.10	98. 5. 13.47	11.29	— 2.18
	30. 10. 15. 29.4	22. 53. 45.65	45.72	+ 0.07	98. 6. 53.77	50.85	— 2.92
Oct.	1. 10. 11. 28.4	22. 53. 40.05	40.37	+ 0.32	98. 7. 25.52	23.37	— 2.15
	3. 10. 3. 26.2	22. 53. 29.58	29.86	+ 0.28	98. 8. 30.11	27.10	— 3.01
	5. 9. 55. 24.2	22. 53. 19.36	19.59	+ 0.23	98. 9. 32.85	28.82	— 4.03
	14. 9. 19. 18.8	22. 52. 37.01	37.12	+ 0.11	98. 13. 46.04	42.72	— 3.32
	18. 9. 3. 18.3	22. 52. 20.19	20.38	+ 0.19	98. 15. 24.18	21.30	— 2.88
	20. 8. 55. 18.6	22. 52. 12.28	12.59	+ 0.31	98. 16. 9.54	7.03	— 2.51
	28. 8. 23. 24.4	22. 51. 45.23	45.31	+ 0.08	98. 18. 47.29	44.77	— 2.52
	31. 8. 11. 28.3	22. 51. 36.81	36.83	+ 0.02	98. 19. 36.59	33.02	— 3.57
Nov.	1. 8. 7. 29.5	22. 51. 33.96	34.23	+ 0.27	98. 19. 53.29	47.77	— 5.52
	2. 8. 3. 31.2	22. 51. 31.58	31.74	+ 0.16	98. 20. 5.12	1.67	— 3.45
	18. 7. 0. 13.2	22. 51. 8.03	8.15	+ 0.12	98. 22. 5.21	3.06	— 2.15
	19. 6. 56. 16.8	22. 51. 7.57	7.72	+ 0.15	98. 22. 6.12	3.96	— 2.16
	21. 6. 48. 24.5	22. 51. 7.03	7.24	+ 0.21	98. 22. 7.71	3.90	— 3.81

INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.	Mean Day, 1853.	Error in R. A.	Number of Obs.	Error in N.P.D.	Number of Obs.	Error in Ecliptic N.P.D.
		.		"		"
January 5 to January 31	January 17	— 0'14	7	+ 0'23	7	— 0'161
February 2 to February 28	February 17	— 0'17	6	— 0'22	7	— 1'073
March 4 to March 26	March 14	— 0'11	7	+ 1'08	7	+ 0'340
March 29 to April 29	April 10	— 0'20	6	+ 0'99	6	— 0'201
May 1 to May 26	May 17	— 0'19	12	+ 1'24	9	+ 0'582
June 2 to June 30	June 17	— 0'13	10	— 0'37	9	— 0'422
July 4 to July 28	July 14	— 0'15	9	+ 0'14	8	+ 0'474
August 1 to August 30	August 13	— 0'05	7	— 0'98	7	— 0'698
Sept. 4 to Sept. 30	September 20	— 0'11	9	— 0'32	8	+ 0'364
October 2 to October 31	October 19	— 0'07	10	— 1'51	9	— 1'031
Nov. 3 to Nov. 22	November 16	— 0'11	8	— 0'76	8	— 0'351
Nov. 30 to Dec. 31	December 19	— 0'12	7	— 1'40	8	— 1'368

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,
 $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$,
 and altering the number of observations so as to make the assumed weights of opposite parts of the year equal :

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots \left\{ \begin{array}{l} - 0''.161 = + 0.4599 x - 0.8879 y + z \text{ Weight } 8 \\ - 1.073 = + 0.8554 x - 0.5180 y + z \text{ ,, } 8 \\ + 0.340 = + 0.9942 x - 0.1071 y + z \text{ ,, } 8 \end{array} \right. \\
 \text{Summer} \dots\dots\dots \left\{ \begin{array}{l} - 0.201 = + 0.9365 x + 0.3508 y + z \text{ ,, } 7 \\ + 0.582 = + 0.5527 x + 0.8334 y + z \text{ ,, } 9 \\ - 0.422 = + 0.0674 x + 0.9977 y + z \text{ ,, } 9 \end{array} \right. \\
 \text{Autumn} \dots\dots\dots \left\{ \begin{array}{l} + 0.474 = - 0.3727 x + 0.9279 y + z \text{ ,, } 7 \\ - 0.698 = - 0.7725 x + 0.6350 y + z \text{ ,, } 8 \\ + 0.364 = - 0.9990 x + 0.0454 y + z \text{ ,, } 9 \end{array} \right. \\
 \text{Winter} \dots\dots\dots \left\{ \begin{array}{l} - 1.031 = - 0.8987 x - 0.4386 y + z \text{ ,, } 9 \\ - 0.351 = - 0.5866 x - 0.8098 y + z \text{ ,, } 8 \\ - 1.368 = - 0.0425 x - 0.9991 y + z \text{ ,, } 8 \end{array} \right.
 \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1853.

Equations multiplied by the Weights.

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots \left\{ \begin{array}{l} - 1.288 = + 3.6792 x - 7.1032 y + 8 z \\ - 8.584 = + 6.8432 x - 4.1440 y + 8 z \\ + 2.720 = + 7.9536 x - 0.8568 y + 8 z \end{array} \right. \\
 \text{Summer} \dots\dots\dots \left\{ \begin{array}{l} - 1.407 = + 6.5555 x + 2.4556 y + 7 z \\ + 5.238 = + 4.9743 x + 7.5006 y + 9 z \\ - 3.798 = + 0.6066 x + 8.9793 y + 9 z \end{array} \right. \\
 \text{Autumn} \dots\dots\dots \left\{ \begin{array}{l} + 3.318 = - 2.6089 x + 6.4953 y + 7 z \\ - 5.584 = - 6.1800 x + 5.0800 y + 8 z \\ + 3.276 = - 8.9910 x + 0.4086 y + 9 z \end{array} \right. \\
 \text{Winter} \dots\dots\dots \left\{ \begin{array}{l} - 9.279 = - 8.0883 x - 3.9474 y + 9 z \\ - 2.808 = - 4.6928 x - 6.4784 y + 8 z \\ - 10.944 = - 0.3400 x - 7.9928 y + 8 z \end{array} \right.
 \end{array}$$

New Equations formed by adding and subtracting those above, as indicated below :

$$\begin{array}{l}
 \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\
 - 29.140 = - 0.2886 x + 0.3968 y + 98 z \\
 \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\
 + 14.902 = + 61.5134 x + 13.2662 y \\
 \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\
 - 31.226 = + 10.9984 x - 61.4420 y
 \end{array}$$

Solution of these Equations :

$$\begin{array}{l}
 x = + 0''.129 \\
 y = + 0.531 \\
 z = - 0.319
 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic N. P. D. is positive, or the assumed Ecliptic is south of the Sun's true path, by $0''.129$; and therefore that the right ascensions of all stars ought to be increased by $\frac{0''.129}{15 \times \sin 23^\circ.28'} = 0''.022$.

The second term indicates that the obliquity assumed in the Nautical Almanac ought to be increased by $0''.531$.

The third term indicates that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $0''.638$.

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES of the SUN and PLANETS.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1853.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
				s	"	"	"
Jan. 5 to Jan. 31	7	7	January 17	- 0.14	+ 0.23	- 1.97	- 0.16
Feb. 2 to Feb. 28	6	7	February 17	- 0.17	- 0.22	- 2.26	- 1.07
March 4 to March 26	7	7	March 14	- 0.11	+ 1.08	- 1.94	+ 0.34
March 29 to April 29	6	6	April 10	- 0.20	+ 0.99	- 3.13	- 0.20
May 1 to May 26	12	9	May 17	- 0.19	+ 1.24	- 2.90	+ 0.58
June 2 to June 30	10	9	June 17	- 0.13	- 0.37	- 1.78	- 0.42
July 4 to July 28	9	8	July 14	- 0.15	+ 0.14	- 2.04	+ 0.47
Aug. 1 to Aug. 30	7	7	August 13	- 0.05	- 0.98	- 1.00	- 0.70
Sept. 4 to Sept. 30	9	8	September 20	- 0.11	- 0.32	- 1.64	+ 0.36
Oct. 2 to Oct. 31	10	9	October 19	- 0.07	- 1.51	- 1.51	- 1.03
Nov. 3 to Nov. 22	8	8	November 16	- 0.11	- 0.76	- 1.70	- 0.35
Nov. 30 to Dec. 31	7	8	December 19	- 0.12	- 1.40	- 1.68	- 1.37

MERCURY.

March 26 to March 30	3	3	March 28	- 0.42	- 2.95	- 4.62	- 5.01
May 13 to May 17	2	2	May 16	- 0.11	+ 4.89	- 3.23	+ 4.02
July 12	1	1	July 12	+ 0.02	+ 2.49	+ 1.01	+ 2.29
Sept. 5 to Sept. 18	3	3	September 13	+ 0.28	- 1.59	+ 3.24	- 3.01

VENUS.

Jan. 4 to Jan. 12	3	3	January 10	- 0.64	- 1.18	- 8.96	- 0.52
Feb. 1 to Feb. 20	3	3	February 14	- 0.34	+ 0.54	- 4.79	- 0.60
March 25 to March 30	4	4	March 29	- 0.10	- 1.95	- 0.60	- 2.39
June 7 to June 24	3	3	June 13	+ 0.26	- 1.26	+ 3.56	- 1.27
July 12 to July 23	2	2	July 18	- 0.17	+ 0.54	- 2.16	+ 1.22
Aug. 12 to Aug. 30	2	2	August 21	- 0.05	+ 0.22	- 0.60	+ 0.50
Sept. 17 to Sept. 21	3	3	September 19	- 0.50	- 3.22	- 8.01	- 0.44
Oct. 26 to Nov. 19	4	4	November 12	- 0.40	- 1.67	- 5.34	- 1.85
Nov. 21 to Dec. 2	4	4	November 25	- 0.36	- 1.74	- 4.61	- 2.42
Dec. 16 to Dec. 29	3	3	December 23	- 0.14	- 2.36	- 1.16	- 2.87

MARS.								
Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1853.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.	
Nov. 14 to Dec. 2	7	7	November 23	— 0.50	— 12.81	— 11.49	— 9.28	
Dec. 14 to Dec. 30	5	5	December 26	— 0.72	— 15.12	— 15.75	— 9.79	
VESTA.								
Jan. 3 to Jan. 22	7	7	January 11	+ 1.27	+ 6.50	+ 15.81	+ 12.31	
Dec. 1 to Dec. 30	4	4	December 16	+ 2.16	+ 20.00	+ 37.05	+ 6.34	
CERES.								
March 23 to March 29	4	4	March 27	+ 10.43	+ 64.00	+ 171.62	+ 16.39	
April 7 to April 30	4	4	April 24	+ 11.64	+ 67.94	+ 190.84	+ 10.41	
May 4 to May 21	5	5	May 11	+ 11.47	+ 65.64	+ 187.11	+ 6.02	
May 25 to June 7	4	4	May 31	+ 10.66	+ 60.60	+ 172.87	+ 3.05	
PALLAS.								
March 21 to March 29	4	4	March 26	+ 1.98	+ 27.72	+ 41.69	+ 16.14	
April 27 to May 11	5	5	May 3	+ 2.19	+ 23.09	+ 45.00	+ 9.05	
May 14 to June 7	5	5	May 26	+ 1.97	+ 18.36	+ 39.08	+ 5.53	
JUPITER.								
March 25 to April 7	5	6	March 31	— 0.26	+ 2.72	— 3.47	+ 2.87	
April 18 to April 30	4	4	April 26	— 0.21	+ 2.83	— 2.77	+ 2.96	
May 14 to May 26	5	5	May 23	— 0.15	+ 2.88	— 1.89	+ 3.00	
June 3 to June 29	10	10	June 16	— 0.17	+ 3.75	— 2.04	+ 3.94	
July 5 to July 25	5	5	July 14	— 0.19	+ 3.03	— 2.31	+ 3.29	
Aug. 1 to Aug. 11	3	3	August 7	— 0.20	+ 2.99	— 2.42	+ 3.29	
SATURN.								
Jan. 3 to Jan. 31	12	12	January 13	— 0.69	— 8.81	— 6.89	— 11.49	
Sept. 5 to Sept. 25	4	4	September 16	— 0.10	— 9.76	+ 0.55	— 9.85	
Oct. 2 to Oct. 24	4	4	October 11	— 0.03	— 9.45	+ 1.50	— 9.34	
Nov. 1 to Nov. 23	10	10	November 13	— 0.13	— 9.24	+ 0.18	— 9.42	
Dec. 31	1	1	December 31	— 0.19	— 8.67	— 0.61	— 9.07	

URANUS.							
Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1853.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 3 to Jan. 22	7	7	January 12	+ 11'42	— 57'45	+ 176'67	+ 1'95
Sept. 5 to Sept. 26	4	4	September 17	+ 12'69	— 56'74	+ 192'36	+ 2'07
Oct. 1 to Oct. 25	7	7	October 15	+ 12'69	— 58'81	+ 193'23	+ 0'98
Oct. 31 to Nov. 23	14	14	November 12	+ 12'65	— 59'36	+ 192'96	+ 1'23
NEPTUNE.							
Aug. 6 to Aug. 29	6	6	August 18	+ 0'32	— 2'50	+ 5'36	— 0'48
Sept. 5 to Sept. 27	12	12	September 17	+ 0'18	— 2'47	+ 3'42	— 1'26
Sept. 30 to Oct. 28	8	8	October 11	+ 0'20	— 2'92	+ 3'86	— 1'57
Oct. 31 to Nov. 21	6	6	November 10	+ 0'16	— 3'44	+ 3'50	— 2'27
ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.							
MERCURY.							
Day, 1853.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.					Error of Tables in Hel. E. P. D.	
March 28	— 4'62	=	— 0'225 δL	+ 227780 $\delta \rho$	+ 1'222 δl	— 78513 δr	— 11'28
May 16	— 3'23	=	+ 0'033	— 216150	+ 0'966	+ 90507	+ 8'95
July 12	+ 1'01	=	+ 0'075	+ 204370	+ 0'925	— 88355	+ 5'17
September 13	+ 3'24	=	+ 0'172	— 133898	+ 0'828	+ 41684	— 11'24
VENUS.							
January 10	— 8'96	=	+ 0'383 δL	— 102650 $\delta \rho$	+ 0'617 δl	+ 75459 δr	— 0'99
February 14	— 4'79	=	+ 0'405	— 69131	+ 0'595	+ 50871	— 1'27
March 29	— 0'60	=	+ 0'417	— 34693	+ 0'584	+ 25247	— 5'50
June 13	+ 3'56	=	+ 0'412	+ 24541	+ 0'588	— 17317	— 3'02
July 18	— 2'16	=	+ 0'402	+ 54911	+ 0'598	— 39392	+ 2'74
August 21	— 0'60	=	+ 0'383	+ 88753	+ 0'617	— 63373	+ 1'01
September 19	— 8'01	=	+ 0'358	+ 121700	+ 0'642	— 88075	— 0'79
November 12	— 5'34	=	+ 0'244	+ 208115	+ 0'755	— 152680	— 2'39
November 25	— 4'61	=	+ 0'186	+ 237890	+ 0'813	— 174725	— 2'82
December 23	— 1'16	=	— 0'047	+ 322530	+ 1'046	— 236725	— 2'54

MARS.		
Day, 1853.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
November 23	$-11'49 = + 0'976 \delta L - 93752 \delta \rho + 0'024 \delta l + 154930 \delta r$	$- 7'57$
December 26	$-15'75 = + 1'327 - 11640 - 0'327 + 187570$	$- 6'12$
VESTA.		
January 11	$+ 15'81 = + 1'114 \delta L + 36200 \delta \rho$	$+ 9'72 + 2117 \delta \rho$
December 16	$+ 37'05 = + 1'123 - 40923$	$+ 4'10 - 1926$
CERES.		
March 27	$+ 171'62 = + 1'452 \delta L - 26723 \delta \rho$	$+ 5'58 - 5899 \delta \rho$
April 24	$+ 190'84 = + 1'608 - 3674$	$+ 5'93 - 6053$
May 11	$+ 187'11 = + 1'578 + 12531$	$+ 6'16 - 5452$
May 31	$+ 172'87 = + 1'441 + 26420$	$+ 6'52 - 4315$
PALLAS.		
March 26	$+ 41'69 = + 1'586 \delta L - 26297 \delta \rho$	$+ 9'18 - 16852 \delta \rho$
May 3	$+ 45'00 = + 1'637 + 19704$	$+ 9'26 - 20370$
May 26	$+ 39'08 = + 1'421 + 37151$	$+ 9'26 - 18068$
JUPITER.		
March 31	$- 3'47 = + 1'057 \delta L - 7524 \delta \rho - 0'057 \delta l + 40046 \delta r$	$+ 2'67$
April 26	$- 2'77 = + 1'147 - 6354 - 0'147 + 33477$	$+ 2'55$
May 23	$- 1'89 = + 1'221 - 3062 - 0'221 + 15989$	$+ 2'45$
June 16	$- 2'04 = + 1'236 + 1010 - 0'236 - 5310$	$+ 3'19$
July 14	$- 2'31 = + 1'186 + 5270 - 0'186 - 27465$	$+ 2'76$
August 7	$- 2'42 = + 1'108 + 7336 - 0'108 - 38155$	$+ 2'93$
SATURN.		
January 13	$- 6'89 = + 1'034 \delta L + 2391 \delta \rho - 0'034 \delta l - 22335 \delta r$	$- 11'05$
September 16	$+ 0'55 = + 1'043 - 2437 - 0'043 + 22092$	$- 9'40$
October 11	$+ 1'50 = + 1'087 - 1848 - 0'087 + 16886$	$- 8'57$
November 13	$+ 0'18 = + 1'121 - 378 - 0'121 + 3469$	$- 8'40$
December 31	$- 0'61 = + 1'084 + 1867 - 0'084 - 17265$	$- 8'34$

URANUS.

Day, 1853.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). $\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.	Error of Tables in Hel. E. P. D.
	" " "	"
January 12	$+176.67 = +1.011 \delta L + 510 \delta \rho - 0.011 \delta l - 10322 \delta r$	$+ 1.93$
September 17	$+192.36 = +1.035 - 406 - 0.035 + 8021$	$+ 2.00$
October 15	$+193.23 = +1.050 - 182 - 0.050 + 3628$	$+ 0.93$
November 12	$+192.96 = +1.052 + 93 - 0.052 - 1880$	$+ 1.17$

NEPTUNE.

August 18	$+ 5.36 = +1.033 \delta L - 77 \delta \rho - 0.033 \delta l + 2129 \delta r$	$- 0.47$
September 17	$+ 3.42 = +1.033 + 46 - 0.034 - 1540$	$- 1.22$
October 11	$+ 3.86 = +1.027 + 136 - 0.027 - 4230$	$- 1.53$
November 10	$+ 3.50 = +1.012 + 207 - 0.013 - 6431$	$- 2.24$

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE, 1853.

Day, 1853.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1853.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
Jan. 1	"	"		"	"		Feb 16	"	"	JH	"	"	R
3	$+ 7.86$	$+ 0.70$	R	$+ 6.13$	$- 2.17$	R	17	$+ 6.92$	$- 5.46$	JH	$+ 8.79$	$- 4.14$	D
4	$+ 4.68$	$+ 4.08$	H	$+ 4.11$	$- 0.08$	H	18				$+ 5.81$	$- 6.56$	JH
5				$+ 3.27$	$+ 1.45$	D	19	$+ 2.73$	$- 7.32$	D	$+ 6.51$	$- 8.48$	H
13				$- 0.44$	$+ 4.84$	R	20				$+ 5.83$	$- 9.10$	H
15	$+ 3.00$	$+ 0.26$	D	$+ 3.62$	$+ 5.86$	D	21	$+ 2.55$	$- 7.93$	H	$- 0.03$	$- 11.46$	R
16				$+ 6.35$	$+ 1.27$	JH	22				$+ 3.31$	$- 9.24$	D
18	$+ 8.08$	$- 5.55$	JH	$+ 0.70$	$+ 0.67$	R	23	$+ 3.82$	$- 3.03$	D	$+ 3.97$	$- 6.75$	JH
19				$+ 10.28$	$- 6.02$	D	25				$+ 5.06$	$- 5.01$	H
20	$+ 7.77$	$- 8.09$	D	$+ 11.39$	$- 3.20$	H	27	$+ 9.21$	$+ 2.34$	JH	$+ 6.56$	$- 0.03$	D
21	$+ 2.76$	$- 9.55$	H	$+ 10.21$	$- 11.22$	JH	28	$+ 11.31$	$+ 4.44$	R	$+ 9.04$	$+ 1.14$	R
22	$+ 0.35$	$- 8.47$	R	$+ 8.74$	$- 8.84$	JH					$+ 9.77$	$+ 4.47$	H
23	$+ 5.10$	$- 7.14$	M	$+ 4.72$	$- 10.36$	D	Mar. 3						
24				$+ 3.45$	$- 6.96$	H	11				$+ 8.25$	$+ 12.30$	R
25				$+ 4.79$	$- 5.67$	R	12				$- 2.98$	$+ 11.32$	H
26	$+ 6.55$	$- 4.35$	D	$+ 4.85$	$- 7.67$	R	13				$- 1.97$	$+ 5.88$	R
27				$+ 9.27$	$- 4.01$	H	14				$+ 1.39$	$+ 4.62$	D
30	$+ 9.05$	$- 1.86$	D	$+ 4.13$	$- 3.52$	JB	15				$- 0.31$	$+ 1.11$	JH
31	$+ 11.40$	$+ 6.80$	R	$+ 5.30$	$+ 1.34$	R	17				$+ 2.24$	$- 1.67$	D
Feb. 1							18	$- 0.17$	$- 8.61$	H	$+ 1.61$	$- 3.62$	R
11				$+ 5.73$	$- 7.77$	JH	19	$+ 0.22$	$- 9.74$	R	$+ 2.94$	$- 7.02$	JH
14	$+ 4.78$	$- 1.82$	H	$- 0.22$	$+ 8.49$	H	20	$- 0.39$	$- 8.70$	JH	$- 0.72$	$- 10.21$	D
15	$+ 3.67$	$- 6.61$	D	$+ 8.65$	$- 2.96$	C	21				$- 5.80$	$- 5.32$	H
							22	$- 3.58$	$- 6.42$	H	$+ 0.22$	$- 6.16$	R
											$+ 3.29$	$- 8.37$	JH

Jan. 31. Transit Circle. Foggy: very faint.

Feb. 1. Altazimuth. D U.L. very faint.

Feb. 25. Altazimuth. The Moon was very faint, and could bear no illumination in the field from the axis gas lamp. The sky was covered with an uniform thin cirrostratus cloud.

Feb. 28. Altazimuth. The Moon's limb very badly defined.

ERRORS of the MOON'S TABULAR PLACE—continued.

Day, 1853.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1853.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
	"	"		"	"			"	"		"	"	
Mar. 23	— 1'47	— 4'95	R	— 3'10	— 7'72	D	July 18				— 0'21	+ 9'83	E
24	+ 6'10	— 2'95	JH	+ 5'74	— 4'83	H	19	+ 9'29	+ 9'36	JH	+ 10'29	+ 8'18	JB
25	+ 7'57	— 0'97	M	+ 6'79	— 3'64	R	22	+ 16'80	+ 8'88	H	+ 15'22	+ 8'93	E
26	+ 9'05	— 1'25	D	+ 6'87	— 1'24	JH	23				+ 19'69	+ 8'91	JB
27	+ 12'06	+ 4'38	H	+ 7'09	+ 2'81	R	24	+ 15'03	+ 5'87	E	+ 11'14	+ 7'20	H
28	+ 9'00	+ 7'37	R	+ 7'18	+ 3'69	D	25				+ 10'29	+ 0'07	D
29	+ 6'34	+ 8'02	D	+ 4'99	+ 4'99	H	26				+ 9'38	— 3'06	JH
30	+ 8'06	+ 9'54	H	+ 3'77	+ 8'97	JH	28	+ 8'47	— 5'89	E	+ 10'15	— 2'46	H
31	+ 8'46	+ 3'90	JH	+ 8'26	+ 6'86	R	30				+ 1'84	— 7'70	JH
April 1	+ 2'94	+ 13'42	R	+ 1'41	+ 8'46	D	Aug. 7				+ 26'31	— 11'11	JH
11				+ 7'30	+ 2'74	R	8				+ 19'29	— 5'19	D
13				+ 3'21	— 0'50	D	9	+ 16'81	— 4'60	JH	+ 17'41	— 4'29	E
14				+ 6'58	— 3'90	H	10	+ 13'36	— 4'69	D	+ 11'11	— 0'41	JB
17	+ 1'35	— 10'41	R	+ 3'76	— 10'48	D	11	+ 11'31	— 4'01	E	+ 15'00	— 0'34	JH
20	— 2'27	— 6'70	H	+ 1'93	— 7'89	JH	12				+ 6'85	— 1'40	D
23	+ 11'33	— 0'46	D	+ 13'56	— 5'50	C	13	+ 8'86	— 0'92	JH	+ 7'47	+ 0'37	E
25				+ 12'45	+ 3'56	D	17	+ 16'79	+ 8'43	JH	+ 15'38	+ 4'27	E
26	+ 9'87	+ 4'72	D	+ 12'87	+ 2'03	JH	18	+ 16'96	+ 5'99	JB	+ 22'15	+ 6'66	D
27	+ 8'44	+ 5'29	JH				20				+ 18'01	+ 3'85	JB
May 10				+ 9'71	— 6'68	C	23	+ 9'22	— 0'69	C	+ 12'20	+ 1'25	E
11				+ 9'67	— 3'88	H	24	+ 8'79	— 0'59	E	+ 10'44	— 1'52	JH
13				+ 8'65	— 3'74	D	25	+ 5'67	— 3'74	JH	+ 1'43	— 5'45	D
14	+ 5'05	— 7'08	JH	+ 9'47	— 6'37	C	26	+ 3'13	— 4'14	D	+ 3'31	— 6'88	C
15				+ 9'66	— 5'55	H	27	+ 3'78	— 6'39	C	+ 4'95	— 7'94	E
16	+ 3'13	— 5'53	D	+ 3'80	— 3'82	JH	28				+ 2'95	— 7'16	JH
17				+ 6'91	— 6'04	H	29				+ 0'82	— 9'84	D
18	+ 2'93	— 4'59	JH	+ 5'96	— 4'40	C	30				+ 10'03	— 9'92	JH
19	+ 2'03	— 3'32	H	+ 3'28	— 4'60	M	Sept. 5				+ 35'30	— 11'49	E
20	+ 5'43	— 3'76	C	+ 7'92	— 0'53	JH	6				+ 26'38	— 3'32	D
21	+ 6'87	+ 1'64	D	+ 10'00	— 0'76	H	9				+ 12'54	— 2'01	E
22	+ 14'04	+ 3'77	JH	+ 15'26	+ 2'82	C	10	+ 1'70	+ 1'02	M	+ 7'08	— 1'05	D
23	+ 13'68	+ 7'31	H	+ 10'00	+ 2'39	D	11				+ 7'19	+ 2'68	H
25	+ 14'23	+ 5'46	C	+ 10'96	+ 7'30	H	13	+ 12'30	+ 0'21	H	+ 12'32	+ 0'57	E
26	+ 8'34	+ 6'06	H	+ 5'06	+ 7'32	M	16	+ 22'96	+ 1'44	JH	+ 20'26	+ 11'45	M
27				+ 0'71	+ 1'03	D	17	+ 22'35	— 1'13	H	+ 25'81	— 1'20	E
28				— 2'10	+ 2'98	M	18	+ 20'92	— 0'24	M	+ 25'81	— 1'59	JH
June 10				+ 9'80	— 0'80	H	19				+ 18'24	— 3'60	H
11				+ 17'50	— 2'03	JH	20	+ 17'41	+ 2'36	FT	+ 13'68	— 1'77	JH
14	+ 6'05	— 2'22	D	+ 8'80	— 3'41	H	21	+ 8'20	— 0'75	E	+ 5'12	— 4'94	H
16	+ 5'00	— 0'39	H	+ 5'80	— 0'03	D	22				+ 4'03	— 5'66	JH
17	+ 5'84	+ 1'19	JH	+ 5'50	— 0'32	E	23	— 1'99	— 3'92	JH	— 1'32	— 5'37	M
18	+ 3'53	+ 1'65	D	+ 1'50	+ 1'16	H	24				— 2'93	— 7'45	E
19				+ 5'19	+ 8'04	JH	25	+ 1'19	— 6'00	E	+ 0'41	— 8'63	M
21	+ 9'63	+ 8'32	E	+ 7'70	+ 4'58	H	26				+ 2'80	— 9'27	JH
23	+ 15'81	— 2'56	E	+ 13'52	+ 5'05	H	27				+ 7'99	— 11'82	M
28	+ 6'80	— 3'50	D	+ 7'64	— 2'42	H	28				+ 14'78	— 12'09	E
29				+ 8'07	— 2'41	E	29				+ 18'81	— 10'43	H
30				+ 2'82	— 10'98	E	Oct. 5				+ 31'66	+ 4'22	H
July 9				+ 18'12	— 0'80	H	8				+ 11'17	+ 6'56	M
10				+ 17'93	— 0'93	E	9	+ 6'99	+ 7'07	JH	+ 8'42	+ 5'57	H
11	+ 13'56	— 2'76	D				12				+ 10'79	+ 3'07	D
12	+ 9'79	— 2'84	E	+ 10'59	+ 1'30	H	13				+ 12'46	+ 4'66	H
14				+ 6'13	+ 1'80	E	14	+ 16'40	+ 0'61	D	+ 13'73	— 0'01	E
15	+ 2'81	+ 1'88	FT	+ 7'91	+ 2'88	JH	15	+ 15'90	— 1'17	H	+ 18'52	— 1'86	JH
17	+ 1'08	+ 8'92	M	+ 4'92	+ 7'76	JH	16	+ 17'61	— 0'18	E	+ 18'77	— 4'01	D
							17				+ 15'04	— 6'48	H

Day, 1853.		Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1853.		Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
		In	In		In	In				In	In		In	In	
		Longitude.	E. N. P. D.		Longitude.	E. N. P. D.				Longitude.	E. N. P. D.		Longitude.	E. N. P. D.	
		"	"		"	"				"	"		"	"	
Oct.	18	+ 12.36	- 3.75	D	+ 16.27	- 2.10	E	Nov.	19	+ 2.95	- 0.43	E	+ 1.63	- 6.02	D
	19				+ 9.66	- 3.91	JH		20	- 0.24	- 3.16	D	- 0.83	- 4.46	H
	20	+ 3.33	- 3.11	E	+ 1.80	- 6.31	D		21	+ 2.13	- 4.67	H	+ 0.51	- 7.20	JH
	22				- 2.77	- 5.42	E		23				+ 1.06	- 1.25	M
	23	- 3.60	- 3.85	E	+ 0.46	- 6.16	D		26				+ 0.75	- 0.55	JB
	24	+ 8.06	- 5.97	D	+ 0.33	- 7.73	H	Dec.	2				+ 22.05	+ 10.02	N
	25	+ 7.57	- 4.50	H	+ 8.30	- 8.87	JH		8	+ 11.97	- 1.06	JH	+ 16.01	+ 0.60	D
	26	+ 19.32	- 6.74	JH					9				+ 11.49	+ 2.50	H
	27				+ 11.67	- 8.29	D		12	+ 4.33	- 4.02	JH	+ 3.91	- 8.66	D
	28				+ 11.69	- 5.35	H		13				+ 1.61	- 9.65	H
	30				+ 23.44	- 2.26	E		14				+ 9.90	- 7.89	JH
Nov.	8				+ 13.60	+ 7.06	H		15				+ 7.55	- 7.23	E
	9	+ 13.78	+ 5.89	D	+ 13.65	+ 1.87	E		16				+ 17.51	- 6.22	FT
	10	+ 9.50	+ 1.04	H	+ 16.13	+ 2.15	JH		17				+ 15.53	- 7.89	H
	11	+ 9.27	+ 1.35	E	+ 12.77	- 1.77	D		18				+ 5.61	- 10.45	JH
	12				+ 8.69	- 2.56	C		19				+ 5.71	- 4.78	H
	13				+ 13.22	- 3.94	E		22				+ 10.00	- 4.03	E
	14				+ 14.15	- 3.79	JH		23				+ 12.41	- 2.02	JH
	16	+ 13.35	- 3.87	JH	+ 10.97	- 6.45	H		24				+ 8.92	- 7.55	E
	17	+ 7.36	- 3.02	D	+ 7.52	- 3.77	E		25	+ 7.76	+ 2.47	M	+ 10.47	- 2.11	FT
	18	+ 4.82	- 2.83	H	+ 8.61	- 8.44	JH		26				+ 2.87	+ 0.21	E



ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS OF γ DRACONIS

WITH THE

REFLEX ZENITH TUBE,

AND

REDUCTION OF THE OBSERVATIONS.

1853.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1853.

Day and Hour of Observation, 1853.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equi- valent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1853, Jan. 1.	Mean Zenith Distance North, 1853, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"		
April ^{d h} " 1. 17	R	Left Right	16 15	43.855 46.112	38.442 38.442	38.2 1.0	99.8 62.2	0.89 0.41	+ 257.96 - 76.83	171.42	86.54 94.59	+ 20.72	107.26 115.31
April " 10. 17	JH	Left Right	16 15	46.372 48.604	36.228 36.228	36.2 2.0	98.6 64.4	0.87 0.42	+ 262.86 - 81.49		91.44 89.93	+ 19.73	111.17 109.66
April " 26. 16	D	Left Right	16 15	48.605 50.559	34.130 34.130	33.5 3.2	97.0 67.7	0.84 0.46	+ 265.09 - 79.14		93.67 92.28	+ 16.97	110.64 109.25
May " 20. 14	C	Left Right	16 15	49.004 50.121	34.112 34.112	31.0 5.0	93.0 66.5	0.80 0.46	+ 271.45 - 71.49		100.03 99.93	+ 10.80	110.83 110.73
May " 25. 14	D	Left Right	16 15	50.121 51.253	32.971 32.971	31.2 10.5	90.3 70.1	0.79 0.52	+ 271.03 - 71.41		99.61 100.01	+ 9.28	108.89 109.29
May " 26. 14	C	Left Right	16 15	48.210 49.195	35.010 35.010	31.5 9.2	89.4 67.0	0.78 0.49	+ 273.18 - 71.05		101.76 100.37	+ 8.97	110.73 109.34
June " 3. 13	D	Left Right	16 15	48.869 49.390	34.495 34.495	25.3 12.0	86.0 73.2	0.72 0.55	+ 275.53 - 65.73		104.11 105.69	+ 6.46	110.57 112.15
June " 6. 13	E	Right	15	49.674	34.172	16.8	75.3	0.59	- 65.12		106.30	+ 5.50	111.80
June " 7. 13	C	Left Right	16 15	49.723 50.163	33.756 33.756	84.5 72.5	26.9 14.0	0.72 0.56	+ 277.46 - 66.32		106.04 105.10	+ 5.18	111.22 110.28
June " 11. 12	E	Left Right	16 15	49.400 49.698	34.012 34.012	26.0 15.8	81.8 72.0	0.70 0.57	+ 276.31 - 62.83		104.89 108.59	+ 3.90	108.79 112.49
June " 16. 12	H	Right Left	15 16	49.702 49.702	34.063 33.927	15.0 25.0	72.1 82.5	0.56 0.69	- 63.74 + 279.95		107.68 108.53	+ 2.30	109.98 110.83
June " 17. 12	JH	Left Right	16 15	49.701 49.812	33.930 33.930	25.3 16.2	82.5 73.0	0.70 0.58	+ 279.99 - 63.37		108.57 108.05	+ 1.98	110.55 110.03
June " 23. 12	E	Left Right	16 15	49.820 49.562	33.992 33.992	23.0 21.5	80.4 78.5	0.67 0.65	+ 282.99 - 60.29		111.57 111.13	+ 0.09	111.66 111.22
June " 29. 11	D	Left Right	16 15	49.830 49.558	34.002 34.002	22.5 18.8	79.7 77.0	0.66 0.62	+ 283.31 - 60.36		111.89 111.06	- 1.77	110.12 109.29
July " 5. 11	E	Left Right	16 15	49.322 48.702	34.584 34.584	22.4 23.0	78.5 79.5	0.65 0.66	+ 284.55 - 55.80		113.13 115.62	- 3.58	109.55 112.04
July " 12. 11	E	Left Right	16 15	48.718 47.980	35.310 35.310	20.2 22.5	75.6 78.4	0.62 0.65	+ 286.57 - 55.86		115.15 115.56	- 5.62	109.53 109.94

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16''.780 + \text{sum of level readings} \times 0''.00646$; where w , for wire 15, = 0, and, for wire 16, = $3'.38''.36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

April 1. Very tremulous; the observations altogether very bad.

April 10. The observations very unsatisfactory.

May 25. Very tremulous; the image very bad.

May 26. The image much blurred.

June 3. The image very bad.

June 6. Very tremulous. The star was not seen after reversion.

June 7. Very tremulous.

June 16. Very doubtful; the image bad.

June 23. The observation was not considered very good.

July 5. The second bisection was not good. The observations hurried.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1853—concluded.

Day and Hour of Observation, 1853.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equiv- alent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1853, Jan. 1.	Mean Zenith Distance North, 1853, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"		
July ^{d h} 15. 10	FT	Left	16	49.265	34.942	17.2	74.9	0.59	+ 289.55	171.42	118.13 (108.54)	— 6.43	111.70 (102.11)
" "		Right	15	48.765	34.942	22.1	81.0	0.67	— 62.88				
July 22. 10	H	Right	15	47.640	35.473	24.2	80.3	0.68	— 52.92		118.50	— 8.26	110.24
" "		Left	16	47.640	36.768	19.5	76.0	0.62	+ 292.94		121.52			113.26
July 25. 10	E	Left	16	47.660	36.570	18.0	74.7	0.60	+ 289.94		118.52	— 8.98	109.54
" "		Right	15	46.496	36.570	25.3	82.0	0.69	— 52.14		119.28			110.30
August 4. 9	D	Left	16	45.942	38.462	19.0	76.0	0.61	+ 292.87		121.45	— 11.23	110.22
" "		Right	15	44.477	38.462	23.0	80.0	0.67	— 49.98		121.44			110.21
August 8. 9	H	Right	15	43.476	39.372	24.0	80.7	0.68	— 48.46		122.96	— 12.07	110.89
" "		Left	16	43.476	41.101	17.5	74.2	0.59	+ 295.76		124.34			112.27
August 10. 9	D	Left	16	43.482	40.951	16.4	74.0	0.58	+ 293.32		121.90	— 12.45	109.45
" "		Right	15	41.808	40.951	26.5	84.5	0.72	— 47.02		124.40			111.95
August 12. 8	FT	Left	16	41.950	42.646	17.2	74.1	0.59	+ 296.07		124.65	— 12.79	111.86
" "		Right	15	40.183	42.646	25.3	82.6	0.70	— 48.17		123.25			110.46
August 20. 8	D	Left	16	39.282	45.261	15.5	71.5	0.56	+ 295.15		123.73	— 14.11	109.62
" "		Right	15	37.483	45.261	26.5	83.5	0.71	— 46.76	124.66	110.55		
August 24. 8	C	Right	15	37.502	45.260	26.5	84.1	0.72	— 47.07	124.35	— 14.63	109.72	
" "		Left	16	37.502	47.061	11.6	68.9	0.52	+ 295.45	124.03			109.40
September 6 7	JB	Right	15	37.068	45.550	29.5	87.3	0.76	— 44.69	126.73	— 15.92	110.81	
September 10. 7	M	Right	15	37.079	45.539	28.5	86.5	0.74	— 44.67	126.75	— 16.14	110.61	
" "		Left	16	37.079	47.670	13.5	70.8	0.55	+ 298.60	127.18			111.04
September 19. 6	E	Left	16	37.110	47.563	13.5	70.5	0.54	+ 297.32	125.90	— 16.36	109.54	
" "		Right	15	35.030	47.563	27.3	84.6	0.72	— 44.23	127.19			110.83
November 18. 2	JB	Left	16	33.490	50.598	13.3	77.5	0.59	+ 287.54	116.12	— 7.38	108.74	
December 2. 1	JH	Right	15	42.774	40.591	18.2	81.6	0.65	— 57.11	114.31	— 3.03	111.28	

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 38'' \cdot 36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

July 15. The image very bad at the last bisection of A.

July 22. Very cloudy.

August 24. The observation bad; a thin cloud passed over at the time.

September 6. Only one bisection could be secured.

November 18. The observer did not see the star until it was going out of the field, when a hurried bisection was made. The star was very faint and tremulous.

December 2. After this reading the star vanished from the field.

ROYAL OBSERVATORY, GREENWICH.

ECLIPSE

OF

JUPITER'S FIRST SATELLITE,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1853.

ECLIPSE OF JUPITER'S FIRST SATELLITE, 1853.

Day of Observation.	Satellite.	Phenomenon.	Observer.	Instrument.	Clock.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Mean Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
						<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>s</small>
July 5	I	(a) Ecl. reap....	E	E. Eq.	Earn.	18. 20. 27 ^o	18. 20. 17 ¹	18. 21. 7 ⁷⁴	11. 25. 40 ⁷⁵	11. 25. 44 ²⁰	+ 3 ⁴⁵

(a) The power used was probably too low for the purpose. The time noted is that at which the Satellite was first seen ; its increase of brightness was gradual.

OCCULTATIONS OF STARS BY THE MOON, 1853.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock or Chronometer.	Time noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
							<small>h m s</small>	<small>h m s</small>	<small>h m s</small>	<small>h m s</small>
Mar. 26	(a) γ 95 Virginis ...	Reap. .	Dark	D	Altaz.	G ¹	12. 23. 50 ⁵	12. 23. 27 ²⁰	12. 24. 17 ¹⁷	12. 6. 55 ⁵⁶
	κ Virginis	Reap. .	Dark	R	Altaz.	G ¹	16. 7. 24 ⁰	16. 7. 1 ⁰⁰	16. 7. 51 ⁰⁵	15. 49. 52 ⁸¹
Mar. 28	(b) β^1 Scorpii.....	Disap. .	Bright	D	Altaz.	G ¹	12. 59. 27 ⁰	12. 59. 7 ⁰⁰	12. 59. 58 ¹⁴	12. 34. 38 ⁸⁷
	β^1 Scorpii.....	Disap. .	Bright	C	N. Equat.	A ¹	12. 59. 38 ²	12. 59. 6 ⁷⁰	12. 59. 57 ⁸⁴	12. 34. 38 ⁵⁷
	(c) β^1 Scorpii.....	Reap. .	Dark	D	Altaz.	G ¹	14. 4. 35 ⁰	14. 4. 15 ⁰⁰	14. 5. 6 ¹⁸	13. 39. 36 ²⁴
May 20	(d) γ 95 Virginis ...	Disap. .	Dark	C	N. Equat.	A ¹	12. 21. 42 ⁰	12. 22. 52 ⁹⁰	12. 23. 3 ⁷⁷	8. 29. 27 ³⁹
	(e) κ Virginis	Disap. .	Dark	C	Altaz.	G ¹	16. 4. 22 ⁰	16. 4. 33 ⁵⁰	16. 4. 44 ⁵¹	12. 10. 31 ⁸¹
May 22	β^1 Scorpii.....	Disap. .	Dark	JH	N. Equat.	A ¹	12. 32. 25 ⁰	12. 33. 43 ⁸⁵	12. 33. 56 ³⁹	8. 32. 26 ⁴¹
	β^1 Scorpii.....	Disap. .	Dark	C	Altaz.	G ¹	12. 33. 28 ⁰	12. 33. 41 ⁴²	12. 33. 53 ⁹⁶	8. 32. 23 ⁹⁸
	β^1 Scorpii.....	Reap. .	Bright	JH	N. Equat.	A ¹	13. 31. 7 ⁰	13. 32. 25 ⁸⁵	13. 32. 38 ⁴³	9. 30. 58 ⁸⁴
	β^1 Scorpii.....	Reap. .	Bright	C	Altaz.	G ¹	13. 32. 10 ⁸	13. 32. 24 ²⁶	13. 32. 36 ⁸⁴	9. 30. 57 ²⁵
July 17	B. A. C. 5831 .	Disap. .	Dark	M	E. Equat.	Earn.	16. 38. 6 ⁵	16. 37. 50 ⁷⁰	16. 38. 52 ⁵⁵	8. 56. 31 ³⁷
Aug. 24	(f) 48 Geminorum	Reap. .	Dark	E	E. Equat.	Earn.	0. 19. 46 ⁰	0. 19. 5 ³⁰	0. 20. 1 ⁸³	13. 47. 20 ⁹⁸
	(g) 48 Geminorum	Reap. .	Dark	D	Altaz.	G ¹	0. 19. 38 ⁸	0. 19. 4 ⁵⁶	0. 20. 1 ⁰⁹	13. 47. 20 ²⁴
Sept. 20	(h) 38 Arietis	Reap. .	Dark	FT	E. Equat.	Earn.	3. 6. 18 ⁵	3. 6. 16 ⁶⁵	3. 6. 37 ²²	15. 6. 59 ¹²
Oct. 14	(i) 33 Piscium ...	Disap. .	Dark	D	E. Equat.	Earn.	23. 28. 32 ⁹	23. 28. 8 ³⁰	23. 28. 45 ¹⁴	9. 55. 20 ⁹⁵
	(k) 33 Piscium ...	Disap. .	Dark	E	Altaz.	G ¹	23. 28. 8 ¹	23. 28. 8 ⁹⁰	23. 28. 45 ⁷⁴	9. 55. 21 ⁰⁵

(a) The star was very faint, the Moon being very nearly full.

(b) The observation good ; the Star was distinctly visible to the edge of the bright limb, and then disappeared almost instantaneously. The companion star was lost in the glare of the moon about 15 seconds previously.

(c) The companion star (β^2 Scorpi.) appeared about 5 seconds after the larger star.

(d) Good.

(e) The observer considers the time doubtful to 2 seconds, his eye having been withdrawn from the telescope at the instant of disappearance.

(f) The observation was certain to a quarter of a second.

(g) Very good. The dark limb of the Moon was distinctly visible, and the star was seen to emerge instantaneously.

(h) The star darted out instantaneously. The observer's eye was directed to the exact spot of reappearance.

(i) Good.

(k) The observation was certain to a quarter of a second.

Reappearance of 95 Virginis, 1853, March 26, $12^h. 6^m. 55^s. 56 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$186. 4. 17. 55$	"	$+ 15. 0$	$\times t$
Moon's Right Ascension in arc	$209. 43. 5. 85 + x$		$+ 0. 5753$	$\times t$
Moon's N.P.D.	$97. 53. 59. 38 + y$		$+ 0. 2462$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 37. 41$	$\times \left(1 + \frac{m}{1000} \right)$		
Moon's Semidiameter	$16. 32. 40$	$\times \left(1 + \frac{n}{1000} \right)$		
Star's Right Ascension in arc	$209. 44. 22. 35 + e''$			
Star's N.P.D.	$98. 36. 39. 50 + f$	"	"	
Geocentric R.A. of corresponding point in arc	$209. 29. 2. 71 + e$	$+ 0. 1478 \times t - 0. 9196 \times m$		
Geocentric N.P.D. of corresponding point	$97. 44. 47. 31 + f$	$- 0. 0101 \times t - 3. 1122 \times m$		

Geocentric distance of center from corresponding point,

$$16. 41. 25 + 0. 8266 \times \left\{ -e + x + 0. 4275 \times t + 0. 9196 \times m \right\} \\ - 0. 5516 \times \left\{ f - 0. 0101 \times t - 3. 1122 \times m \right\} \\ + 0. 5512 \times \left\{ y + 0. 2462 \times t \right\}$$

Final Equation.

$$- 8. 85 = - 0. 8266 \times e - 0. 5516 \times f + 0. 8266 \times x + 0. 5512 \times y + 0. 4947 \times t + 2. 4768 \times m - 0. 9924 \times n$$

Reappearance of κ Virginis, 1853, March 26, $15^h. 49^m. 52^s. 81 + t^s$, Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$241. 57. 45. 75$	"	$+ 15. 0$	$\times t$
Moon's Right Ascension in arc	$211. 51. 39. 00 + x$		$+ 0. 5780$	$\times t$
Moon's N.P.D.	$98. 48. 30. 63 + y$		$+ 0. 2428$	$\times t$
Moon's Horizontal Equatoreal Parallax	$60. 37. 43$	$\times \left(1 + \frac{m}{1000} \right)$		
Moon's Semidiameter	$16. 32. 39$	$\times \left(1 + \frac{n}{1000} \right)$		
Star's Right Ascension in arc	$211. 16. 5. 55 + e''$			
Star's N.P.D.	$99. 35. 21. 90 + f$	"	"	
Geocentric R.A. of corresponding point in arc	$211. 35. 37. 87 + e$	$+ 0. 1388 \times t + 1. 1723 \times m$		
Geocentric N.P.D. of corresponding point	$98. 43. 23. 13 + f$	$+ 0. 0137 \times t - 3. 1188 \times m$		

Geocentric distance of center from corresponding point,

$$16. 38. 44 + 0. 9402 \times \left\{ -e + x + 0. 4392 \times t - 1. 1723 \times m \right\} \\ - 0. 3083 \times \left\{ f + 0. 0137 \times t - 3. 1188 \times m \right\} \\ + 0. 3077 \times \left\{ y + 0. 2428 \times t \right\}$$

Final Equation.

$$- 6. 05 = - 0. 9402 \times e - 0. 3083 \times f + 0. 9402 \times x + 0. 3077 \times y + 0. 4834 \times t - 0. 1407 \times m - 0. 9924 \times n$$

Disappearance of β^1 Scorpii, 1853, March 28, 12^h. 34^m. 38^s.87 + t^s , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	194.	59.	32.	10	+ 15.0	$\times t$
Moon's Right Ascension in arc	238.	31.	58.	35	+ x	+ 0.6156 $\times t$
Moon's N. P. D.	108.	21.	26.	99	+ y	+ 0.1740 $\times t$
Moon's Horizontal Equatoreal Parallax	60.	10.	48	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16.	25.	13	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	239.	13.	32.	10	+ e''	
Star's N. P. D.	109.	23.	59.	50	+ f'	
Geocentric R. A. of corresponding point in arc	238.	45.	54.	46	+ e	+ 0.1189 $\times t$ - 1.6576 $\times m$
Geocentric N. P. D. of corresponding point	108.	30.	49.	04	+ f	- 0.0367 $\times t$ - 3.1905 $\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &16.12.15 + 0.7741 \times \left\{ + e - x - 0.4967 \times t - 1.6576 \times m \right\} \\
 &+ 0.5777 \times \left\{ f' - 0.0367 \times t - 3.1905 \times m \right\} \\
 &- 0.5787 \times \left\{ y + 0.1740 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 12''.98 = + 0.7741 \times e + 0.5777 \times f' - 0.7741 \times x - 0.5787 \times y - 0.5064 \times t - 3.1264 \times m - 0.9851 \times n$$

Reappearance of β^1 Scorpii, 1853, March 28, 13^h. 39^m. 36^s.24 + t^s , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	211.	16.	32.	70	+ 15.0	$\times t$
Moon's Right Ascension in arc	239.	11.	57.	90	+ x	+ 0.6164 $\times t$
Moon's N. P. D.	108.	32.	44.	34	+ y	+ 0.1719 $\times t$
Moon's Horizontal Equatoreal Parallax	60.	9.	31	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16.	24.	81	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in Arc	239.	13.	32.	10	+ e''	
Star's N. P. D.	109.	23.	59.	50	+ f'	
Geocentric R. A. of corresponding point in arc	238.	54.	59.	00	+ e	+ 0.1475 $\times t$ - 1.1131 $\times m$
Geocentric N. P. D. of corresponding point	108.	28.	46.	54	+ f	- 0.0248 $\times t$ - 3.3130 $\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 &16.35.01 + 0.9207 \times \left\{ - e + x + 0.4689 \times t + 1.1131 \times m \right\} \\
 &- 0.2398 \times \left\{ f' - 0.0248 \times t - 3.3130 \times m \right\} \\
 &+ 0.2382 \times \left\{ y + 0.1719 \times t \right\}
 \end{aligned}$$

Final Equation.

$$- 10''.20 = - 0.9207 \times e - 0.2398 \times f' + 0.9207 \times x + 0.2382 \times y + 0.4785 \times t + 1.8193 \times m - 0.9848 \times n$$

Disappearance of 95 Virginis, 1853, May 20, 8^h. 29^m. 27^s. 39 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	185.	45.	56.	55	+ 15.0	$\times t$
Moon's Right Ascension in arc.....	209.	12.	52.	05	+ x	+ 0.5745 $\times t$
Moon's N. P. D.....	97.	40.	22.	44	+ y	+ 0.2514 $\times t$
Moon's Horizontal Equatoreal Parallax.....	60.	46.	99	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	16.	36.	75	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	209.	44.	28.	50	+ e''	
Star's N. P. D.....	98.	36.	40.	50	+ f	"
Geocentric R. A. of corresponding point in arc.....	209.	28.	55.	12	+ e	+ 0.1481 $\times t$ - 0.9334 $\times m$
Geocentric N. P. D. of corresponding point.....	97.	44.	40.	71	+ f	- 0.0099 $\times t$ - 3.1198 $\times m$
Geocentric distance of center from corresponding point,						

$$\begin{aligned}
 &16.28.70 + 0.9565 \times \left\{ + e - x - 0.4264 \times t - 0.9334 \times m \right\} \\
 &+ 0.2609 \times \left\{ f - 0.0099 \times t - 3.1198 \times m \right\} \\
 &- 0.2615 \times \left\{ y + 0.2514 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 8''.05 = + 0.9565 \times e + 0.2609 \times f - 0.9565 \times x - 0.2615 \times y - 0.4761 \times t - 1.7068 \times m - 0.9968 \times n$$

Disappearance of κ Virginis, 1853, May 20, 12^h. 10^m. 31^s. 81 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	241.	11.	7.	65	+ 15.0	$\times t$
Moon's Right Ascension in arc.....	211.	20.	30.	15	+ x	+ 0.5794 $\times t$
Moon's N. P. D.....	98.	35.	39.	40	+ y	+ 0.2490 $\times t$
Moon's Horizontal Equatoreal Parallax.....	60.	52.	35	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	16.	38.	17	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	211.	16.	12.	30	+ e''	
Star's N. P. D.....	99.	35.	23.	10	+ f	"
Geocentric R. A. of corresponding point in arc.....	211.	35.	22.	34	+ e	+ 0.1404 $\times t$ + 1.1500 $\times m$
Geocentric N. P. D. of corresponding point.....	98.	43.	8.	94	+ f	+ 0.0132 $\times t$ - 3.1342 $\times m$
Geocentric distance of center from corresponding point,						

$$\begin{aligned}
 &16.29.98 + 0.8810 \times \left\{ + e - x - 0.4390 \times t + 1.1500 \times m \right\} \\
 &+ 0.4539 \times \left\{ f + 0.0132 \times t - 3.1342 \times m \right\} \\
 &- 0.4545 \times \left\{ y + 0.2490 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 8''.19 = + 0.8810 \times e + 0.4539 \times f - 0.8810 \times x - 0.4545 \times y - 0.4940 \times t - 0.4094 \times m - 0.9982 \times n$$

Disappearance of β^1 Scorpii, 1853, May 22, 8^h. 32^m. 26^s.41 + t^s , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	188.	29.	5.85		+ 15.0	$\times t$
Moon's Right Ascension in arc	238.	24.	59.40	+ x	+ 0.6428	$\times t$
Moon's N. P. D.	108.	29.	53.90	+ y	+ 0.1853	$\times t$
Moon's Horizontal Equatorcal Parallax	61.	24.55	$\times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	16.	46.51	$\times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	239.	13.	48.00	+ e''		
Star's N. P. D.	109.	24.	2.00	+ f'	"	"
Geocentric R. A. of corresponding point in arc	238.	42.	30.24	+ e	+ 0.1065 $\times t$	- 1.8778 $\times m$
Geocentric N. P. D. of corresponding point	108.	30.	49.53	+ f	- 0.0416 $\times t$	- 3.1925 $\times m$

Geocentric distance of center from corresponding point,

$$16'. 38''.05 + 0''.9467 \times \left\{ + e - x - 0.5363 \times t - 1.8778 \times m \right\} \\ + 0.0549 \times \left\{ f - 0.0416 \times t - 3.1925 \times m \right\} \\ - 0.0565 \times \left\{ y + 0.1853 \times t \right\}$$

Final Equation.

$$+ 8''.46 = + 0.9467 \times e + 0.0549 \times f - 0.9467 \times x - 0.0565 \times y - 0.5205 \times t - 1.9530 \times m - 1.0065 \times n$$

Reappearance of β^1 Scorpii, 1853, May 22, 9^h. 30^m. 57^s.25 + t^s , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	203.	9.	12.60		+ 15.0	$\times t$
Moon's Right Ascension in arc	239.	2.	36.15	+ x	+ 0.6428	$\times t$
Moon's N. P. D.	108.	40.	44.18	+ y	+ 0.1853	$\times t$
Moon's Horizontal Equatoreal Parallax	61.	24.50	$\times \left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	16.	46.49	$\times \left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	239.	13.	48.00	+ e''		
Star's N. P. D.	109.	24.	2.00	+ f'	"	"
Geocentric R. A. of corresponding point in arc	238.	50.	0.42	+ e	+ 0.1374 $\times t$	- 1.4276 $\times m$
Geocentric N. P. D. of corresponding point	108.	28.	36.85	+ f	- 0.0317 $\times t$	- 3.3252 $\times m$

Geocentric distance of center from corresponding point,

$$17'. 0''.86 + 0''.6651 \times \left\{ - e + x + 0.5054 \times t + 1.4276 \times m \right\} \\ - 0.7128 \times \left\{ f - 0.0317 \times t - 3.3252 \times m \right\} \\ + 0.7120 \times \left\{ y + 0.1853 \times t \right\}$$

Final Equation.

$$- 14''.37 = - 0.6651 \times e - 0.7128 \times f + 0.6651 \times x + 0.7120 \times y + 0.4906 \times t + 3.3197 \times m - 1.0065 \times n$$

Disappearance of B. A. C. 5831, 1853, July 17, 8^h. 56^m. 31^s.37 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	249.43.	8.25			+ 15.0	$\times t$
Moon's Right Ascension in arc.....	256.56.41.40			+ x	+ 0.6560	$\times t$
Moon's N. P. D.	112.48.27.85			+ y	+ 0.1104	$\times t$
Moon's Horizontal Equatoreal Parallax.....	60.22.23	\times	$\left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	16.29.29	\times	$\left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	257.17.40.35			+ e''		
Star's N.P.D.	113.54.22.20			+ f	"	"
Geocentric R.A. of corresponding point in arc	257.12.16.75			+ e	+ 0.1711 $\times t$	- 0.3236 $\times m$
Geocentric N.P.D. of corresponding point	112.56.15.12			+ f	- 0.0084 $\times t$	- 3.4871 $\times m$

Geocentric distance of center from corresponding point,

$$16.20.33 + 0.8099 \times \left\{ + e - x - 0.4849 \times t - 0.3236 \times m \right\} \\ + 0.4758 \times \left\{ f - 0.0084 \times t - 3.4871 \times m \right\} \\ - 0.4774 \times \left\{ y + 0.1104 \times t \right\}$$

Final Equation.

$$+ 8''.96 = + 0.8099 \times e + 0.4758 \times f - 0.8099 \times x - 0.4774 \times y - 0.4494 \times t - 1.9212 \times m - 0.9893 \times n$$

Reappearance of 48 Geminorum, 1853, August 29, 13^h. 47^m. 20^s.24 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	5. 0.16.35				+ 15.0	$\times t$
Moon's Right Ascension in arc	105.32. 2.55			+ x	+ 0.5621	$\times t$
Moon's N.P.D.....	64.56. 1.87			+ y	+ 0.0153	$\times t$
Moon's Horizontal Equatoreal Parallax	55. 0.57	\times	$\left(1 + \frac{m}{1000}\right)$			
Moon's Semidiameter	15. 0.98	\times	$\left(1 + \frac{n}{1000}\right)$			
Star's Right Ascension in arc	105.52.40.80			+ e''		
Star's N.P.D.....	65.37.45.70			+ f	"	"
Geocentric R.A. of corresponding point in arc.....	105.15.27.70			+ e	- 0.0320 $\times t$	- 2.2331 $\times m$
Geocentric N.P.D. of corresponding point	64.56. 8.70			+ f	+ 0.0581 $\times t$	- 2.4970 $\times m$

Geocentric distance of center from corresponding point,

$$15. 1.19 + 0.9057 \times \left\{ - e + x + 0.5941 \times t + 2.2331 \times m \right\} \\ + 0.0086 \times \left\{ f + 0.0581 \times t - 2.4970 \times m \right\} \\ - 0.0066 \times \left\{ y + 0.0153 \times t \right\}$$

Final Equation.

$$- 0''.21 = - 0.9057 \times e + 0.0086 \times f + 0.9057 \times x - 0.0066 \times y + 0.5385 \times t + 2.0010 \times m - 0.9010 \times n$$

Reappearance of 38 Arietis, 1853, September 20, 15^h. 6^m. 59.12 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	46. 39. 18.30	+	15.0	$\times t$
Moon's Right Ascension in arc	39. 30. 7.35	+	x	+ 0.4799 $\times t$
Moon's N.P.D.	77. 24. 38.66	+	y	- 0.1910 $\times t$
Moon's Horizontal Equatoreal Parallax	54. 46.78	\times	$\left(1 + \frac{m}{1000}\right)$	
Moon's Semidiameter	14. 57.38	\times	$\left(1 + \frac{n}{1000}\right)$	
Star's Right Ascension in arc	39. 14. 52.80	+	e''	
Star's N.P.D.	78. 10. 19.00	+	f	" "
Geocentric of R.A. of corresponding point in arc ..	39. 19. 23.56	+	e	+ 0.1484 $\times t$ + 0.2708 $\times m$
Geocentric N.P.D. of corresponding point	77. 35. 30.77	+	f	- 0.0038 $\times t$ - 2.0882 $\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 15. 5.70 + 0.6773 \times & \left\{ -e + x + 0.3315 \times t - 0.2708 \times m \right\} \\
 + 0.7202 \times & \left\{ f - 0.0038 \times t - 2.0882 \times m \right\} \\
 - 0.7198 \times & \left\{ y - 0.1910 \times t \right\}
 \end{aligned}$$

Final Equation.

$$- 8''.32 = - 0.6773 \times e + 0.7202 \times f + 0.6773 \times x - 0.7198 \times y + 0.3593 \times t - 1.6873 \times m - 0.8974 \times n$$

Disappearance of 33 Piscium, 1853, October 14, 9^h. 55^m. 21.55 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	352. 11. 26.10	+	15.0	$\times t$
Moon's Right Ascension in arc	359. 8. 11.25	+	x	+ 0.4876 $\times t$
Moon's N.P.D.	95. 45. 16.20	+	y	- 0.2248 $\times t$
Moon's Horizontal Equatoreal Parallax	56. 11.64	\times	$\left(1 + \frac{m}{1000}\right)$	
Moon's Semidiameter	15. 20.10	\times	$\left(1 + \frac{n}{1000}\right)$	
Star's Right Ascension in arc	359. 27. 46.65	+	e''	
Star's N.P.D.	96. 31. 32.90	+	f	" "
Geocentric R.A. of corresponding point in arc ..	359. 23. 18.95	+	e	+ 0.1493 $\times t$ - 0.2677 $\times m$
Geocentric N.P.D. of corresponding point	95. 44. 7.03	+	f	- 0.0022 $\times t$ - 2.8459 $\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned}
 15. 5.78 + 0.9920 \times & \left\{ +e - x - 0.3383 \times t - 0.2677 \times m \right\} \\
 - 0.0767 \times & \left\{ f - 0.0022 \times t - 2.8459 \times m \right\} \\
 + 0.0761 \times & \left\{ y - 0.2248 \times t \right\}
 \end{aligned}$$

Final Equation.

$$+ 14''.32 = + 0.9920 \times e - 0.0767 \times f - 0.9920 \times x + 0.0761 \times y - 0.3525 \times t - 0.0472 \times m - 0.9201 \times n$$

ROYAL OBSERVATORY, GREENWICH.

MEASURES OF DISTANCE AND ANGLE OF POSITION

OF THE

COMPONENTS OF γ VIRGINIS,

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE EAST EQUATOREAL.

1853.

RESULTS of MEASURES of DISTANCE and ANGLE of POSITION, for each Day's Observations of the COMPONENTS of γ VIRGINIS, observed at the Royal Observatory, Greenwich, with a Double-Image Micrometer on the East Equatoreal.

$$\gamma \text{ VIRGINIS. } \begin{cases} \text{R.A.} = 12^{\text{h}}. 34^{\text{m}}. \\ \text{N.P.D.} = 90^{\circ}. 38'. \end{cases}$$

Day and Mean Solar Hour.	Observed Distance.	Method of Observation.	Number of Measures.	Observed Angle of Position.	Number of Measures.	Observer.
1853 <small>d h</small> May 20.9	" 3.32	Equal Distances	10	<small>° ' "</small> 175.50	1	M
May 21.9	3.29	Equal Distances	10	178.57	1	M



RESULTS

OF THE

ASTRONOMICAL OBSERVATIONS.

MADE AT

THE ROYAL OBSERVATORY, GREENWICH,

1854.

(EXTRACTED FROM THE GREENWICH OBSERVATIONS, 1854.)

ROYAL OBSERVATORY, GREENWICH.

C A T A L O G U E

OF

CONCLUDED MEAN RIGHT ASCENSIONS AND NORTH POLAR DISTANCES,

FOR 1854, JANUARY 1,

OF STARS OBSERVED IN THE YEAR 1854,

WITH THE ANNUAL VARIATIONS :

(The North Polar Distances being corrected for Discordance of Direct and Reflexion-Observations, for Flexure of Telescope of the Transit-Circle, and for Error of Assumed Colatitude :)

ALSO,

NEW CONSTANTS FOR STARS INCLUDED IN THE CATALOGUE,

NOT OBSERVED IN PRECEDING YEARS.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS AND MEAN NORTH POLAR DISTANCES, FOR JAN. 1, 1854, OF STARS
OBSERVED IN THE YEAR 1854; WITH THE ANNUAL VARIATIONS.

(The N.P.D.'s are corrected for Discordance of Direct and Reflexion-Observations, for Flexure of Telescope of the
Transit-Circle, and for Error of Assumed Colatitude.)

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N.P.D.		Mean N.P.D. 1854, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N.P.D.
						D.	R.	D.	R.				
1	W. B. XXIII. 1242.	2	0.99	^h 0. 20.38	+ 3.070	2		^s 101. 56. 31.44	"	2	0.99	31.44	- 20.06
2	W. B. XXIII. 1249.	2	0.90	0. 0. 49.88	3.070	3		99. 38. 8.05		3	0.87	8.05	20.06
3	α Andromedæ	8	0.61	0. 0. 50.95	3.084	6		61. 42. 56.93		6	0.71	56.93	19.91
4	γ Pegasi	9	0.80	0. 5. 43.31	3.082	8		75. 37. 42.74		8	0.95	42.74	20.04
5	W. B. O. 102	3	0.93	0. 6. 33.42	3.063	3		102. 6. 58.12		3	0.93	58.12	20.05
6	*	2	0.83	0. 8. 13.64	3.061	3		101. 50. 39.52		3	0.83	39.52	20.04
7	12 Ceti	9	0.91	0. 22. 35.32	3.063	9		94. 45. 52.92		9	0.89	52.92	19.95
8	Groombridge 96	4	0.85	0. 27. 23.05	3.283	4		36. 36. 7.88		4	0.85	7.88	19.91
9	13 Ceti	2	0.47	0. 27. 44.21	3.085	2		94. 23. 50.49		2	0.47	50.49	19.88
10	B. A. C. 146	5	0.81	0. 28. 2.20	3.296	3		36. 38. 12.19		3	0.91	12.19	19.95
11	ε Andromedæ	3	0.88	0. 30. 50.95	3.155	7	4	61. 28. 54.80	54.80	11	0.78	54.80	19.67
12	α Cassiopeiæ	7	0.50	0. 32. 14.94	3.353	2		34. 15. 50.98		7	0.51	50.96	19.82
	α Cassiopeiæ S.P.					5		50.95					
13	β Ceti	11	0.11	0. 36. 15.53	3.013	10		108. 47. 19.74		10	0.80	19.74	19.83
14	ζ Andromedæ	1	0.90	0. 39. 36.51	3.170	2	1	66. 31. 41.18	41.59	3	0.84	41.32	19.69
15	η ¹ Cassiopeiæ	3	0.83	0. 40. 17.89	3.566	3		32. 57. 37.19		3	0.83	37.19	19.27
16	η ² Cassiopeiæ	3	0.83	0. 40. 18.82	3.566	2		32. 57. 40.44		2	0.85	40.44	19.27
17	δ Piscium	1	0.91	0. 41. 6.61	3.107	1		83. 12. 38.85		1	0.91	38.85	19.73
18	20 Ceti	1	0.98	0. 45. 32.83	3.064	1		91. 56. 20.09		1	0.98	20.09	19.67
19	γ Cassiopeiæ			0. 48. (0)		1	1	30. 4. 30.40	30.57	2	0.83	30.49	19.64
20	W. B. O. 834	2	0.74	0. 48. 12.89	3.014	2		101. 32. 6.18		2	0.74	6.18	19.61
21	μ Andromedæ	5	0.82	0. 48. 39.84	3.302	4	1	52. 17. 37.38	35.93	5	0.76	37.09	19.68
22	70 Piscium	2	0.82	0. 54. 31.52	3.112	1		82. 50. 52.04		1	0.89	52.04	19.67
23	ε Piscium	8	0.87	0. 55. 22.16	3.114	8		82. 53. 49.42		8	0.86	49.42	19.50
24	e Piscium	5	0.77	1. 0. 51.08	3.083	4		85. 7. 26.58		4	0.81	26.58	19.17
25	β Andromedæ	1	0.06	1. 1. 34.16	3.337	1		55. 9. 16.88		1	0.46	16.88	19.26
26	Polaris	169	0.53	1. 6. 12.98	18.060	87	4	1. 28. 7.79	8.80	194	0.53	8.00	19.24
	Polaris S.P.					100	3	8.12	9.07				
27	38 Ceti	1	0.98	1. 7. 22.01	3.056			91. 45.					
28	f Piscium	2	0.93	1. 10. 16.28	3.090	2		87. 9. 21.25		2	0.93	21.25	19.11
29	W. B. I. 206	1	0.80	1. 13. 25.84	3.056	1		92. 4. 48.71		1	0.80	48.71	19.03
30	θ Ceti	21	0.74	1. 16. 43.54	3.000	19		98. 56. 16.73		19	0.72	16.73	18.74
31	μ Piscium	4	0.82	1. 22. 32.28	3.137	4		84. 36. 37.64		4	0.82	37.64	18.59
32	*	1	0.83	1. 22. 57.27	3.088	1		87. 47. 4.13		1	0.83	4.13	18.75
33	*	1	0.74	1. 23. 6.43	3.089	1		87. 52. 23.32		1	0.74	23.32	18.75
34	η Piscium	14	0.71	1. 23. 40.65	3.200	13	2	75. 24. 30.33	31.17	15	0.80	30.44	18.75
35	W. B. I. 400	1	0.98	1. 23. 40.81	3.089	1		87. 52. 3.71		1	0.98	3.71	18.73
36	B. A. C. 458	1	0.82	1. 24. 42.98	2.784	1		120. 44. 26.10		1	0.82	26.10	18.70
37	B. A. C. 482	4	0.78	1. 28. 37.15	3.854	2		32. 46. 6.94		2	0.78	6.94	18.57
38	π Piscium	3	0.79	1. 29. 21.81	3.171	3		78. 36. 24.88		3	0.79	24.88	18.63
39	ν Piscium	20	0.75	1. 33. 50.21	3.117	18		85. 15. 10.37		18	0.74	10.37	18.37
40	B. A. C. 527	3	0.87	1. 35. 32.90	2.747	3		123. 3. 52.50		3	0.87	52.50	18.35
41	ο Piscium	7	0.70	1. 37. 41.32	3.152	7		81. 34. 43.99		7	0.70	43.99	18.30
42	*	1	0.74	1. 38. 26.81	3.037	1		93. 31. 53.23		1	0.74	53.23	18.23
43	*	1	0.74	1. 38. 38.97	3.036	1		93. 31. 58.75		1	0.74	58.75	18.23
44	54 Ceti	1	0.03	1. 43. 7.36	3.171	1		79. 40. 55.95		1	0.03	55.95	17.99
45	W. B. I. 790	1	0.72	1. 44. 11.61	3.036	1		93. 21. 39.15		1	0.72	39.15	18.02
46	β Arictis	14	0.78	1. 46. 34.98	3.298	17	1	69. 54. 28.04	27.87	18	0.79	28.03	17.81
47	*	1	0.96	1. 55. 5.90	3.194	1		79. 12. 57.24		1	0.96	57.24	17.58
48	W. B. I. 990	1	0.03	1. 55. 27.64	+ 3.036	1		93. 4. 56.56		1	0.03	56.56	- 17.56

6. Of the 10th magnitude.

33. Of the 11th magnitude.

45. Of the 10-11th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued*.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
49	W. B. I. 988	2	0.97	1. 55. 29.25	+ 3.196	2		79. 3. 6.57	"	2	0.96	6.57	- 17.56
50	α Arietis.....	22	0.71	1. 58. 57.12	3.363	23	1	67. 13. 48.92	49.12	24	0.61	48.93	17.27
51	ξ^1 Ceti	4	0.69	2. 5. 15.95	3.169	4		81. 50. 25.05		4	0.73	25.05	17.11
52	*	1	0.87	2. 7. 5.25	3.235	1		76. 52. 37.43		1	0.87	37.43	17.05
53	*	1	0.96	2. 7. 20.44	3.261	1		74. 57. 1.33		1	0.96	1.33	17.04
54	W. B. II. 109	1	0.96	2. 7. 58.12	3.263	1		74. 51. 37.59		1	0.96	37.59	17.01
55	67 Ceti	12	0.72	2. 9. 42.18	2.988	11		97. 5. 49.41		11	0.71	49.41	16.81
56	*	1	0.89	2. 13. 47.77	3.277	1		74. 22. 39.65		1	0.89	39.65	16.73
57	69 Ceti	1	0.03	2. 14. 27.91	3.071	1		90. 16. 26.01		1	0.03	26.01	16.63
58	ξ^2 Ceti	18	0.61	2. 20. 24.04	3.182	16		82. 11. 49.33		16	0.64	49.33	16.41
59	B. A. C. 789	2	0.71	2. 27. 20.49	3.168	2		83. 10. 0.84		2	0.07	0.84	15.93
60	79 Ceti	2	0.87	2. 28. 0.90	3.005	2		94. 11. 3.36		2	0.87	3.36	15.60
61	B. A. C. 793.....	4	0.80	2. 28. 4.83	3.276	4		83. 48. 45.16		4	0.80	45.16	17.32
62	ν Ceti	1	0.09	2. 28. 12.98	3.135	1		85. 2. 48.10		1	0.09	48.10	15.98
63	31 Arietis.....	4	0.63	2. 28. 40.55	3.259	4		78. 11. 16.97		4	0.63	16.97	15.93
64	B. A. C. 830.....	3	0.07	2. 34. 37.66	3.218	3		79. 53. 1.98		3	0.07	1.98	15.60
65	35 Arietis.....	5	0.86	2. 34. 53.63	3.500	4	1	62. 55. 1.04	2.86	5	0.93	1.40	15.63
66	γ Ceti	15	0.54	2. 35. 44.39	3.101	11		87. 22. 56.23		11	0.57	56.23	15.43
67	{ B. A. C. 845... }	4	0.78	2. 37. 3.29	3.232	3		80. 30. 18.55		3	0.82	18.55	15.48
68	μ Ceti	3	0.07	2. 38. 30.37	4.355	3		33. 34. 49.61		3	0.08	49.61	15.44
69	B. A. C. 858.....	2	0.08	2. 38. 46.56	4.359	2		33. 31. 45.77		2	0.08	45.77	15.43
70	40 Arietis.....	2	0.05	2. 40. 21.39	3.350	2		72. 19. 39.66		2	0.05	39.66	15.42
71	π Arietis.....	3	0.81	2. 41. 9.06	3.336	3		73. 8. 44.81		3	0.81	44.81	15.34
72	σ Arietis.....	1	0.00	2. 43. 26.36	3.300	1		75. 31. 20.80		1	0.00	20.80	15.14
73	B. A. C. 892	4	0.07	2. 45. 4.28	3.330	4		74. 6. 51.25		4	0.07	51.25	15.01
74	B. A. C. 905	3	0.07	2. 48. 25.60	3.201	3		82. 12. 31.75		3	0.07	31.75	14.84
75	ϵ Arietis.....	4	0.65	2. 50. 52.30	3.419	5	2	69. 14. 48.42	47.85	7	0.30	48.26	14.74
76	5 Eridani	3	0.07	2. 52. 19.11	3.023	3		93. 2. 56.44		3	0.07	56.44	14.66
77	γ Persei	2	0.79	2. 54. 14.99	4.298	2		37. 4. 9.57		2	0.79	9.57	14.54
78	α Ceti	18	0.72	2. 54. 39.06	3.127	16		86. 29. 9.07		16	0.70	9.07	14.40
79	{ ϵ Fornacis... }	2	0.90	2. 55. 19.98	2.582	2		118. 39. 12.85		2	0.90	12.85	14.19
80	{ B. A. C. 951... }	3	0.38	2. 55. 50.14	3.816	3		51. 43. 44.48		3	0.38	44.48	14.36
81	τ^3 Eridani.....	2	0.55	2. 55. 57.44	2.643	2		114. 11. 57.32		2	0.55	57.32	14.35
82	ρ^3 Eridani.....	3	0.07	2. 57. 6.42	2.943	3		98. 10. 29.60		3	0.07	29.60	14.36
83	δ Arietis.....	6	0.52	3. 3. 17.25	3.419	5		70. 49. 43.88		5	0.47	43.88	13.99
84	94 Ceti	2	0.07	3. 5. 19.57	3.059	2		91. 44. 43.58		2	0.07	43.58	13.77
85	ζ Arietis.....	3	0.61	3. 6. 31.01	3.435	3		69. 30. 0.17		3	0.61	0.17	13.72
86	B. A. C. 1010.....	2	0.08	3. 8. 26.08	2.916	2		99. 18. 51.17		2	0.08	51.17	13.56
87	95 Ceti	3	0.07	3. 10. 54.33	3.066	3		91. 27. 55.03		3	0.07	55.03	13.40
88	Lalande 6129.....	1	0.07	3. 11. 44.72	3.374	1		73. 2. 4.90		1	0.07	4.90	13.44
89	τ^1 Arietis.....	4	0.81	3. 12. 48.30	3.450	4		69. 22. 56.92		4	0.81	56.92	13.32
90	κ^2 Ceti	3	0.08	3. 13. 28.84	3.132	3		86. 51. 12.45		3	0.08	12.45	13.27
91	α Persei	5	0.55	3. 13. 55.27	4.241	5		40. 39. 46.28		5	0.55	46.28	13.24
92	Groombridge 660 ..	2	0.87	3. 15. 40.31	4.241	1		40. 46. 30.58		1	0.82	30.58	13.18
93	64 Arietis.....	1	0.06	3. 15. 41.73	3.529	1		65. 47. 48.68		1	0.06	48.68	13.11
94	δ Tauri	16	0.54	3. 16. 57.64	+ 3.224	16		81. 29. 17.90		16	0.58	17.90	13.04
95	B. A. C. 1058.....			3. 17. (20.)		2	2	30. 34. 25.19	24.82	4	0.86	25.01	- 13.11

61. The large proper motion attributed to this star in the B. A. C. is confirmed by comparison of the Greenwich 12-year Catalogue with the result given above.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D. — *continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R.A. 1854, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N.P.D.		Mean N.P.D. 1854, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N.P.D.
						D.	R.	D.	R.				
96	ξ Tauri.....	3	0.30	^h 3. 19. 15.71	+ 3.245	2		^s 80. 46. 48.49	"	2	0.45	48.49	- 12.91
97	δ Tauri.....	2	0.10	3. 22. 26.01	3.275	2		79. 10. 5.29		2	0.10	5.29	12.69
98	f Tauri.....	2	0.09	3. 22. 49.24	3.307	2		77. 34. 0.50		2	0.04	0.50	12.71
99	t Tauri.....	3	0.07	3. 24. 42.29	3.240	3		81. 7. 24.93		3	0.07	24.93	12.53
100	ε Eridani.....	7	0.66	3. 26. 3.23	2.827	7		99. 57. 19.07		7	0.66	19.07	12.42
101	10 Tauri.....	2	0.10	3. 29. 25.47	3.060	2		90. 3. 53.82		2	0.10	53.82	11.73
102	12 Tauri.....	3	0.78	3. 32. 14.98	3.119	3		87. 25. 16.07		3	0.78	16.07	12.06
103	γ Camelopardali...			3. 35. (0)		1	1	19. 7. 29.90	28.53	2	0.98	29.22	11.83
104	ϕ Persei.....			3. 35. (10)		2	1	58. 10. 41.01	44.00	3	0.84	42.01	11.87
105	W. B. III. 680.....	1	0.82	3. 35. 48.52	2.861	1		100. 58. 20.53		1	0.82	20.53	11.80
106	17 Tauri.....	5	0.61	3. 36. 12.81	3.552	5	1	66. 20. 59.60	59.09	6	0.79	59.51	11.74
107	B. A. C. 1152.....	1	0.81	3. 36. 35.47	2.864	1		100. 57. 3.79		1	0.81	3.79	11.75
108	25 Eridani.....	1	0.09	3. 37. 28.83	3.558	1		90. 45. 35.07		1	0.09	35.07	11.65
109	η Tauri.....	17	0.55	3. 38. 48.78	3.553	13	1	66. 21. 1.95	0.17	14	0.57	1.82	11.54
110	e Tauri.....	2	0.08	3. 40. 16.27	3.281	2		79. 18. 34.16		2	0.08	34.16	11.44
111	27 Tauri.....	1	0.02	3. 40. 29.32	3.556			66. 24.					
112	B. A. C. 1192.....	2	0.09	3. 41. 32.79	3.605	2		64. 51. 55.72		2	0.54	55.72	11.14
113	B. A. C. 1205.....	2	0.07	3. 44. 44.03	3.041	2		91. 35. 23.67		2	0.07	23.67	11.07
114	W. B. III. 909.....	1	0.08	3. 46. 57.70	3.004	1		93. 23. 16.62		1	0.08	16.62	11.00
115	32 Eridani.....	3	0.07	3. 46. 57.74	3.012	3		93. 23. 23.30		3	0.07	23.30	11.00
116	γ Eridani.....	12	0.46	3. 51. 13.13	2.796	10		103. 55. 38.14		10	0.45	38.14	10.58
117	λ Tauri.....	2	0.02	3. 52. 35.76	3.317	2		77. 55. 33.26		2	0.02	33.26	10.59
118	35 Eridani.....	2	0.09	3. 54. 8.26	3.035	2		91. 57. 44.84		2	0.09	44.84	10.41
119	A^1 Tauri.....	4	0.69	3. 56. 4.19	3.537	4		68. 19. 16.76		4	0.70	16.76	10.26
120	B. A. C. 1275.....	5	0.04	4. 0. 52.67	3.351	5		76. 59. 33.13		5	0.04	33.13	9.92
121	W. B. IV. 30.....	2	0.10	4. 2. 47.62	3.357	2		76. 6. 23.61		2	0.10	23.61	9.81
122	W. B. IV. 53.....	2	0.07	4. 3. 58.22	3.374	2		75. 26. 48.08		2	0.07	48.08	9.72
123	ϕ^2 Eridani.....	3	0.89	4. 8. 33.05	2.764	3		97. 53. 3.32		3	0.89	3.32	5.92
124	γ Tauri.....	6	0.61	4. 11. 29.34	3.409	9	3	74. 43. 44.66	45.60	12	0.60	44.90	9.12
125	ε Tauri.....	18	0.60	4. 20. 5.77	3.497	22	3	71. 8. 52.18	52.61	25	0.55	52.23	8.45
126	Aldebaran.....	34	0.65	4. 27. 32.84	3.434	26		73. 47. 19.26		26	0.67	19.26	7.70
127	ν Eridani.....	6	0.66	4. 29. 1.53	2.995	6		93. 39. 16.01		6	0.66	16.01	7.75
128	ν^7 Eridani.....	2	0.99	4. 29. 52.55	2.333	2		120. 51. 49.37		2	0.99	49.37	7.66
129	ϕ^2 Tauri.....	2	0.08	4. 31. 55.87	3.338	2		78. 5. 36.59		2	0.08	36.59	7.55
130	*	1	0.85	4. 32. 8.49	3.538			69. 21.					
131	B. A. C. 1446.....	3	0.12	4. 32. 36.87	2.756	3		104. 38. 45.12		3	0.12	45.12	7.31
132	Lalande 8798.....	1	0.85	4. 32. 43.47	3.538	1		69. 22. 36.29		1	0.85	36.29	7.45
133	B. A. C. 1460.....	7	0.75	4. 36. 20.53	3.325	7		79. 7. 48.66		7	0.75	48.66	7.16
134	μ Eridani.....	3	0.08	4. 38. 12.26	3.002	3		93. 31. 34.30		3	0.08	34.30	7.01
135	9 Camelopardali (α).			4. 39. (30)		6	6	23. 54. 46.50	46.6	12	0.34	46.58	6.92
136	*	1	0.83	4. 40. 18.86	3.567	1		68. 28. 12.94		1	0.83	12.94	6.83
137	*	1	0.82	4. 40. 51.41	3.570	1		68. 20. 32.88		1	0.82	32.88	6.79
138	π^2 Orionis.....	3	0.07	4. 42. 39.51	3.273	2		81. 21. 17.10		2	0.05	17.10	6.61
139	*	1	0.81	4. 43. 16.43	3.578	1		68. 7. 44.60		1	0.81	44.60	6.59
140	ω Eridani.....	5	0.52	4. 45. 43.30	2.947	5		95. 42. 0.53		5	0.52	0.53	6.39
141	5 Orionis.....	4	0.74	4. 45. 46.04	3.126	4		87. 44. 13.42		4	0.73	13.42	6.35
142	ι Aurigæ.....	17	0.47	4. 47. 29.52	3.898	14	2	57. 4. 12.40	12.85	16	0.43	12.46	6.23
143	W. B. IV. 1077.....	1	0.85	4. 49. 4.27	3.200	1		84. 12. 16.91		1	0.85	16.91	6.11
144	b Eridani.....	1	0.12	4. 49. 12.79	2.955	1		95. 24. 23.08		1	0.12	23.08	6.01
145	π^6 Orionis.....	2	0.07	4. 50. 59.06	+ 3.112	2		88. 30. 51.51		2	0.07	51.51	- 5.96

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
146	Lalande 9362.....	6	0·92	4. 51. 33·99	+ 3·554	6		69. 17. 47·34	"	6	0·92	47·34	— 5·90
147	ψ Eridani.....	4	0·09	4. 54. 21·67	2·907	4		97. 23. 31·11		4	0·09	31·11	5·67
148	ι Tauri.....	1	0·10	4. 54. 22·51	3·583	1		68. 37. 24·49		1	0·10	24·49	5·63
149	B. A. C. 1565.....			4. 58. (30)		1	1	10. 56. 60·25	57·42	2	0·99	58·84	5·37
150	m Tauri.....	1	0·10	4. 58. 49·55	3·548	1		71. 33. 19·62		1	0·10	19·62	5·32
151	l Tauri.....	1	0·09	4. 59. 10·22	3·549	1		69. 46. 43·67		1	0·09	43·67	5·21
152	ε Leporis.....	6	0·80	4. 59. 16·88	2·538	6		112. 34. 15·00		6	0·66	15·00	5·21
153	66 Eridani.....	2	0·11	4. 59. 32·60	2·964	2		94. 51. 19·61		2	0·11	19·61	5·19
154	*	1	0·81	4. 59. 49·48	3·266	1		81. 27. 59·67		1	0·81	59·67	5·21
155	*	1	0·81	5. 0. 11·28	3·265	1		81. 27. 59·08		1	0·81	59·08	5·18
156	λ Eridani.....	4	0·89	5. 2. 9·63	2·873	4		98. 56. 42·34		4	0·89	42·34	4·98
157	W. B. V. 54.....	3	0·11	5. 4. 5·42	3·389	2		76. 15. 22·69		2	0·10	22·69	4·85
158	ρ Orionis.....	2	0·13	5. 5. 39·60	3·136	2		87. 19. 0·33		2	0·13	0·33	4·70
159	Capella.....	2	0·10	5. 5. 54·63	4·419	2	1	44. 9. 22·98	22·59	3	0·38	22·85	4·26
160	Rigel.....	28	0·67	5. 7. 31·31	2·880	24		98. 22. 27·09		24	0·69	27·09	4·54
161	*	1	0·11	5. 10. 19·66	3·107	1		88. 25. 42·10		1	0·11	42·10	4·31
162	*	1	0·09	5. 10. 44·24	3·711	1		63. 53. 50·82		1	0·09	50·82	4·28
163	B. A. C. 1648.....	3	0·11	5. 11. 49·56	3·763	3		62. 11. 44·71		3	0·11	44·71	4·13
164	Lalande 10096.....	1	0·11	5. 15. 49·55	3·478	1		72. 45. 24·54		1	0·11	24·54	3·84
165	111 Tauri.....	1	0·16	5. 15. 54·33	3·499	2		72. 45. 25·16		2	0·13	25·16	3·88
166	β Tauri.....	19	0·44	5. 17. 3·95	3·789	16	2	61. 31. 14·98	15·63	18	0·59	15·05	3·53
167	ο Tauri.....	1	0·85	5. 18. 51·93	3·603	1		68. 11. 32·68		1	0·85	32·68	3·61
168	*	1	0·09	5. 19. 1·66	7·964	1		15. 3. 21·03		1	0·09	21·03	3·57
169	118 Tauri.....	1	0·12	5. 20. 17·27	3·691	1		64. 58. 27·10		1	0·12	27·10	3·39
170	Lalande . { 10231 10232 10233 }	2	0·14	5. 20. 17·56	3·685	2		64. 58. 22·69		2	0·13	22·69	3·46
171	*	2	0·08	5. 21. 58·00	3·727	2		63. 32. 2·18		2	0·08	2·18	3·31
172	β Leporis.....	1	0·75	5. 21. 59·45	2·572	1		110. 52. 44·95		1	0·75	44·95	3·24
173	δ Orionis.....	6	0·26	5. 24. 32·93	3·066	4		90. 24. 40·80		4	0·28	40·80	3·05
174	*	1	0·09	5. 25. 45·01	3·732	1		63. 25. 59·70		1	0·09	59·70	2·99
175	Lalande 10456.....	1	0·99	5. 26. 6·88	3·042	1		91. 15. 45·96		1	0·99	45·96	2·95
176	α Leporis.....	3	0·13	5. 26. 17·55	2·648	3		107. 55. 48·52		3	0·13	48·52	2·95
177	B. A. C. 1751.....			5. 27. (50)		1	1	24. 23. 23·19	23·61	2	0·81	23·40	2·81
178	ε Orionis.....	4	0·11	5. 28. 48·35	3·044	4		91. 17. 57·22		4	0·11	57·22	2·71
179	ζ Tauri.....	4	0·49	5. 28. 55·33	3·586	4		68. 57. 5·31		4	0·49	5·31	2·69
180	d Orionis.....	4	0·05	5. 31. 49·28	2·902	3		97. 17. 53·22		3	0·06	53·22	2·40
181	α Columbæ.....	1	0·17	5. 34. 21·78	2·177	1		124. 9. 20·28		1	0·17	20·28	2·24
182	B. A. C. 1813.....			5. 37. (10)		1	1	21. 34. 47·91	47·38	2	0·87	47·65	1·99
183	129 Tauri.....	4	0·05	5. 38. 21·82	3·452	4		74. 14. 21·86		4	0·05	21·86	1·91
184	B. A. C. 1851.....	4	0·08	5. 42. 0·16	3·308	4		80. 10. 41·75		4	0·08	41·75	1·38
185	136 Tauri.....	3	0·37	5. 44. 9·14	3·772	4	2	62. 25. 38·12	37·52	6	0·27	37·92	1·33
186	α Orionis.....	19	0·37	5. 47. 16·12	3·247	18		82. 37. 28·38		18	0·46	28·38	1·11
187	139 Tauri.....	1	0·05	5. 48. 56·20	3·725	2	1	64. 4. 10·01	8·75	3	0·12	9·59	0·97
188	θ Aurigæ.....	1	0·17	5. 49. 46·22	4·093	1		52. 48. 10·42		1	0·17	10·42	0·79
189	W. B. V. 1289.....	2	0·12	5. 50. 38·62	3·114	2		88. 9. 45·97		2	0·12	45·97	0·82
190	59 Orionis.....	2	0·11	5. 50. 49·66	3·116	2		88. 10. 54·71		2	0·11	54·71	0·76
191	B. A. C. 1924.....	3	0·15	5. 52. 54·50	4·759	3		38. 25. 46·04		3	0·15	46·04	0·58
192	1 Geminorum.....	1	0·12	5. 55. 14·83	3·648	1		66. 44. 2·27		1	0·12	2·27	0·31
193	χ ⁴ Orionis.....	1	0·85	5. 55. 14·92	3·565	1		69. 51. 48·08		1	0·85	48·08	0·38
194	66 Orionis.....	2	0·06	5. 57. 15·61	+ 3·169	2		85. 50. 14·25		2	0·06	14·25	— 0·21

161. Of the 9—10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
195	*	1	0.16	^{h m s} 5. 58. 22.99	+ 3.724	1		^{° ' "} 63. 57. 40.59	"	1	0.16	40.59	— 0.14
196	*	1	0.12	6. 0. 3.03	3.642	1		66. 53. 9.50		1	0.12	9.50	+ 0.01
197	{ Rümker 1737 .. } { Lalande 11684 . }	1	0.78	6. 1. 49.40	3.724	1		63. 57. 44.69		1	0.78	44.69	0.16
198	η Geminorum	11	0.21	6. 6. 3.93	3.624	14	2	67. 27. 20.75	20.81	16	0.32	20.76	0.54
199	κ Aurigæ	2	0.15	6. 6. 4.50	3.828	2		60. 27. 11.56		2	0.15	11.56	0.82
200	κ ¹ Orionis	2	0.10	6. 7. 32.82	3.374	2		77. 24. 28.03		2	0.10	28.03	0.66
201	W. B. VI. 334	1	0.16	6. 11. 33.97	2.731	1		104. 16. 44.99		1	0.16	44.99	1.01
202	7 Monocerotis	2	0.14	6. 12. 40.82	2.893	2		97. 45. 56.04		2	0.14	56.04	1.09
203	μ Geminorum	12	0.32	6. 14. 7.64	3.636	9		67. 24. 58.97		9	0.44	58.97	1.37
204	19 Geminorum	2	0.78	6. 23. 13.54	3.454	2		73. 59. 55.87		2	0.78	55.87	1.98
205	γ Geminorum	5	0.28	6. 29. 16.60	3.468	4		73. 28. 50.64		4	0.15	50.64	2.58
206	Cephei 51 Hevelii.. Cephei 51 Hev. S.P.	22	0.37	6. 30. 36.15	30.653	17 20	1 3	2. 44. 48.18 48.62 47.97	49.34 47.97	41	0.43	48.41	2.77
207	ε Geminorum	4	0.65	6. 34. 56.79	3.699	3		64. 43. 44.84		3	0.60	44.84	3.07
208	32 Geminorum	2	0.13	6. 37. 42.09	3.375	2		77. 9. 31.58		2	0.13	31.58	3.27
209	Sirius	13	0.33	6. 38. 42.80	2.645	15		106. 31. 8.04		15	0.37	8.04	4.60
210	18 Monocerotis	2	0.13	6. 40. 14.79	3.136	2		87. 25. 55.30		2	0.13	55.30	3.54
211	33 Geminorum	2	0.13	6. 41. 25.63	3.458	2		73. 38. 8.91		2	0.13	8.91	3.55
212	κ Canis Majoris	3	0.13	6. 44. 23.15	3.242	3		122. 20. 32.77		3	0.13	32.77	3.86
213	e Geminorum	3	0.12	6. 46. 24.32	3.386	3		76. 38. 28.58		3	0.12	28.58	4.09
214	θ Canis Majoris	7	0.35	6. 47. 24.40	2.791	7		101. 51. 33.35		7	0.36	33.35	4.16
215	δ ¹ Canis Majoris ...	3	0.14	6. 48. 4.47	2.492	3		114. 0. 17.14		3	0.14	17.14	4.16
216	ι Canis Majoris	5	0.15	6. 49. 37.60	2.676	5		106. 52. 6.64		5	0.15	6.64	4.30
217	B. A. C. 2280	3	0.14	6. 51. 27.44	3.454	3		73. 51. 47.46		3	0.14	47.46	4.51
218	ε Canis Majoris	7	0.27	6. 52. 53.35	2.360	6		118. 46. 34.65		6	0.29	34.65	4.58
219	B. A. C. 2304	3	0.14	6. 55. 18.83	3.302	3		80. 39. 14.16		3	0.14	14.16	4.90
220	ζ Geminorum	5	0.42	6. 55. 26.89	3.565	5		69. 13. 13.68		5	0.42	13.68	4.82
221	22 Canis Majoris ...	3	0.12	6. 55. 54.19	2.391	3		117. 43. 43.98		3	0.12	43.98	4.85
222	δ ² Canis Majoris ...	3	0.15	6. 56. 55.73	2.507	2		113. 37. 23.53		2	0.11	23.53	4.90
223	γ Canis Majoris ...	1	0.21	6. 57. 9.51	2.718	1		105. 25. 14.74		1	0.21	14.74	4.98
224	45 Geminorum	3	0.14	6. 59. 59.52	3.446	3		73. 50. 26.15		3	0.14	26.15	5.26
225	τ Geminorum	1	0.26	7. 1. 50.47	3.828	1		59. 31. 13.81		1	0.26	13.81	5.41
226	δ Canis Majoris	5	0.15	7. 2. 27.34	2.441	5		116. 9. 52.67		5	0.15	52.67	5.37
227	20 Monocerotis	3	0.09	7. 2. 58.57	2.984	3		94. 0. 46.59		3	0.09	46.59	5.22
228	22 Monocerotis	3	0.14	7. 4. 24.41	3.068	3		90. 15. 17.27		3	0.14	17.27	5.58
229	24 Monocerotis	4	0.06	7. 7. 51.03	3.077	4		89. 54. 41.05		4	0.08	41.05	5.93
230	Lalande 14177	4	0.13	7. 10. 40.17	3.593	4		67. 42. 50.34		4	0.13	50.34	6.09
231	δ Geminorum	10	0.34	7. 11. 24.01	3.596	12	3	67. 45. 12.30	12.02	15	0.33	12.24	6.16
232	π Argūs	1	0.16	7. 11. 59.17	2.141	1		126. 50. 11.62		1	0.16	11.62	6.18
233	ι Geminorum	3	0.68	7. 16. 39.19	3.739	3		61. 54. 59.32		3	0.68	59.32	6.67
234	β Canis Minoris ...	10	0.17	7. 19. 13.87	3.260	11		81. 25. 14.25		11	0.18	14.25	6.85
235	α ¹ Geminorum	4	0.62	7. 25. 16.34	3.856	4		57. 47. 49.21		4	0.62	49.21	7.30
236	Castor	19	0.25	7. 25. 16.70	3.841	22	1	57. 47. 46.40	45.98	23	0.27	46.38	7.37
237	ν Geminorum	1	0.85	7. 26. 55.25	3.717	1		62. 47. 2.74		1	0.85	2.74	7.51
238	Procyon	28	0.31	7. 31. 39.50	3.146	21		84. 24. 16.23		21	0.30	16.23	8.86
239	B. A. C. 2548	1	0.09	7. 35. 37.20	10.166	1	1	9. 46. 12.86	12.24	2	0.09	12.55	8.14
240	κ Geminorum	1	0.26	7. 35. 37.65	3.631	1		65. 15. 23.22		1	0.26	23.22	8.18
241	Pollux	32	0.27	7. 36. 22.61	3.682	32	1	61. 37. 31.65	30.38	33	0.33	31.61	8.25
242	B. A. C. 2599	1	0.16	7. 42. 53.77	+ 2.521	1		114. 33. 0.26		1	0.16	0.26	+ 8.42

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
243	ξ Navis	5	0.16	^h 7. 43. ^m 9. ^s 20	+ 2.527	5		^o 114. 29. ['] 46. ^{''} 28	"	5	0.16	46.28	+ 8.71
244	B. A. C. 2605.....	2	0.10	7. 43. 27.09	3.490	2		70. 18. 19.98		2	0.10	19.98	8.83
245	φ Geminorum	1	0.19	7. 44. 33.33	3.687	1		62. 51. 36.49		1	0.19	36.49	8.87
246	14 Canis Minoris...	5	0.14	7. 50. 46.35	3.116	5		87. 23. 22.95		5	0.14	22.95	9.31
247	Lalande 15595.....	3	0.16	7. 52. 17.38	3.506	3		69. 47. 15.78		3	0.16	15.78	9.44
248	6 Cancri.....	9	0.23	7. 54. 32.69	3.701	10		61. 48. 1.81		10	0.23	1.81	9.68
249	15 Argūs	2	0.24	8. 1. 19.62	2.558	1		113. 53. 11.10		1	0.24	11.10	10.05
250	ψ ² Cancri.....	3	0.17	8. 1. 39.28	3.629	3		64. 3. 12.42		3	0.17	12.42	10.49
251	B. A. C. 2748.....	1	0.15	8. 4. 11.88	3.366	1		75. 33. 50.74		1	0.15	50.74	10.35
252	*	1	0.19	8. 5. 19.25	3.422	1		72. 55. 4.22		1	0.19	4.22	10.43
253	*	1	0.22	8. 5. 47.39	3.439	1		72. 7. 1.94		1	0.22	1.94	10.46
254	β Cancri	3	0.24	8. 8. 35.70	3.263	5		80. 22. 5.63		5	0.19	5.63	10.74
255	B. A. C. 2791	2	0.23	8. 12. 9.43	3.166	2		85. 35. 46.61		2	0.23	46.61	11.03
256	B. A. C. 2803			8. 16. (0)		1	1	22. 13. 42.35	42.89	2	0.07	42.62	11.17
257	B. A. C. 2825	3	0.17	8. 18. 22.03	3.006	3		93. 25. 57.95		3	0.17	57.95	11.36
258	*	1	0.10	8. 22. 16.54	3.330	1		76. 35. 1.75		1	0.10	1.75	11.67
259	η Cancri	12	0.21	8. 24. 15.60	3.485	17	4	69. 3. 59.43	59.07	21	0.22	59.36	11.84
260	*	1	0.09	8. 25. 53.87	3.317	1		77. 8. 41.38		1	0.09	41.38	11.92
261	*	1	0.09	8. 26. 7.60	3.315	1		77. 11. 33.61		1	0.09	33.61	11.94
262	π Ursæ Majoris			8. 27. (20)		1	1	25. 10. 4.26	2.14	2	0.15	3.20	12.01
263	*	1	0.07	8. 31. 53.26	3.298	1		77. 52. 39.80		1	0.07	39.80	12.34
264	B. A. C. 2930.....			8. 33. (50)		1	1	9. 26. 8.03	5.67	2	0.93	6.85	12.47
265	γ Cancri.....	12	0.22	8. 34. 49.90	3.487	9		68. 0. 36.24		9	0.24	36.24	12.52
266	*	2	0.25	8. 35. 31.38	4.017	2		47. 46. 41.96		2	0.25	41.96	12.59
267	Lalande 17161.....	2	0.25	8. 35. 31.92	4.017	2		47. 46. 20.34		2	0.25	20.34	12.59
268	*	1	0.06	8. 36. 7.41	3.283	1		78. 28. 43.86		1	0.06	43.86	12.63
269	δ Cancri	1	0.11	8. 36. 23.03	3.424			71. 19.					
270	ε Hydræ.....	18	0.14	8. 39. 2.44	3.189	16		83. 2. 55.27		16	0.22	55.27	12.86
271	ι Ursæ Majoris	15	0.48	8. 49. 11.44	4.147	7		41. 23. 19.14		15	0.47	19.18	13.79
	ι Ursæ Majoris S.P.					8		19.25					
272	α Cancri.....	3	0.44	8. 50. 29.83	3.293	2	1	77. 34. 47.91	48.91	3	0.25	48.24	13.61
273	*	1	0.19	8. 51. 18.49	3.325	1		75. 27. 29.77		1	0.19	29.77	13.63
274	B. A. C. 3076	3	0.14	8. 53. 47.91	3.190	3		83. 47. 23.91		3	0.14	23.91	13.80
275	ν Cancri	2	0.26	8. 54. 11.70	3.524	2		64. 58. 34.45		2	0.26	34.45	13.88
276	σ ² Ursæ Majoris ...			8. 57. (30)		3	3	22. 16. 39.58	40.11	6	0.24	39.85	14.13
277	*	1	0.16	8. 58. 2.90	3.312	1		75. 48. 37.95		1	0.16	37.95	14.06
278	ω Hydræ.....	3	0.16	8. 58. 17.05	3.169	3		84. 19. 38.02		3	0.16	38.02	14.13
279	κ Cancri.....	10	0.30	8. 59. 50.12	3.262	9		78. 44. 50.35		9	0.23	50.35	14.14
280	ξ Cancri.....	2	0.19	9. 0. 57.55	3.465	2		67. 22. 2.09		2	0.19	2.09	14.22
281	B. A. C. 3133	5	0.19	9. 4. 35.08	3.143	5		85. 32. 14.22		5	0.19	14.22	14.46
282	23 Hydræ.....	4	0.15	9. 9. 26.63	2.979	4		95. 44. 48.00		4	0.15	48.00	14.76
283	83 Cancri.....	9	0.20	9. 10. 49.62	3.360	12	4	71. 40. 42.74	42.00	16	0.24	42.56	14.99
284	W. B. IX. 234.....	1	0.11	9. 11. 48.72	3.284	1		76. 39. 42.00		1	0.11	42.00	14.89
285	B. A. C. 3194.....	2	0.19	9. 15. 4.45	3.491	2		64. 11. 46.33		2	0.19	46.33	15.05
286	B. A. C. 3203.....	2	0.15	9. 15. 59.43	3.176	2		84. 9. 28.17		2	0.15	28.17	15.09
287	κ Leonis	2	0.20	9. 16. 8.59	3.513	2		63. 11. 31.77		2	0.20	31.77	15.17
288	*	1	0.07	9. 17. 18.05	3.269	1		77. 11. 21.37		1	0.07	21.37	15.21
289	B. A. C. 3209.....	4	0.23	9. 17. 26.95	3.345	4		72. 47. 15.42		4	0.23	15.42	15.22
290	h Ursæ Majoris....			9. 20. (0)		7	7	26. 18. 12.80	13.29	14	0.21	13.05	15.32
291	29 Hydræ	2	0.19	9. 20. 5.52	+ 2.942	2		98. 35. 33.85		2	0.19	33.85	+ 15.36

253. Of the 10th magnitude.

260. Of the 10th magnitude.

261. Of the 12th magnitude.

284. Of the 9th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
292	α Hydræ.....	7	0.21	9. 20. 24.75	+ 2.948	4		98. 1. 41.96	"	4	0.21	41.96	+ 15.34
293	B. A. C. 3226	2	0.28	9. 20. 32.78	2.989	2		95. 26. 9.23		2	0.28	9.23	15.39
294	θ Ursæ Majoris	12	0.54	9. 23. 3.99	4.060	4		37. 39. 36.81		11	0.52	37.01	16.11
295	θ Ursæ Majoris S.P.					7		37.23					
295	λ Leonis.....	3	0.44	9. 23. 22.99	3.440	2		66. 23. 28.68		2	0.60	28.68	15.59
296	W. B. IX. 563	1	0.16	9. 25. 46.60	3.259	1		77. 16. 3.46		1	0.16	3.46	15.68
297	33 Hydræ	3	0.20	9. 27. 15.45	2.997	3		95. 15. 56.08		3	0.20	56.08	15.91
298	7 Leonis.....	2	0.24	9. 27. 53.88	3.291	2		74. 58. 17.99		2	0.24	17.99	15.87
299	*	1	0.05	9. 28. 12.00	3.252	1		77. 34. 31.16		1	0.05	31.16	15.81
300	10 Leonis.....	3	0.20	9. 29. 30.04	3.176	3		82. 30. 44.04		3	0.20	44.04	15.86
301	δ Hydræ	3	0.19	9. 32. 23.86	3.072	3		90. 28. 56.16		3	0.19	56.16	16.15
302	ϵ Leonis.....	8	0.26	9. 33. 21.32	3.228	9	1	79. 26. 45.46	45.87	10	0.26	45.50	16.14
303	*	1	0.25	9. 34. 26.37	3.340	1		71. 16. 59.92		1	0.25	59.92	16.14
304	ψ Leonis.....	2	0.25	9. 35. 46.59	3.279	2		75. 18. 47.34		2	0.27	47.34	16.25
305	ϵ Leonis.....	19	0.22	9. 37. 33.41	3.425	20	1	65. 33. 21.66	21.79	21	0.22	21.67	16.35
306	B. A. C. 3336	3	0.20	9. 38. 27.71	3.171	3		82. 37. 11.80		3	0.20	11.80	16.35
307	μ Leonis.....	6	0.27	9. 44. 27.16	3.427	9	3	63. 18. 28.34	28.12	12	0.26	28.28	16.71
308	7 Sextantis	3	0.18	9. 44. 40.12	3.103	3		86. 52. 1.01		3	0.18	1.01	16.55
309	26 Leonis.....	12	0.22	9. 50. 15.17	3.273	12		74. 5. 4.33		12	0.22	4.33	16.94
310	π Leonis.....	6	0.25	9. 52. 29.71	3.182	6		81. 15. 26.81		6	0.25	26.81	17.06
311	η Leonis	4	0.22	9. 59. 22.10	3.284	4		72. 31. 38.78		4	0.22	38.78	17.33
312	Regulus	33	0.33	10. 0. 35.57	3.203	31	1	77. 19. 16.42	14.98	32	0.36	16.37	17.38
313	34 Leonis.....	5	0.20	10. 3. 46.82	3.241	5		75. 55. 34.63		5	0.20	34.63	17.64
314	Groombridge 1626..	1	0.27	10. 7. 22.62	3.672	1		46. 28. 37.10		1	0.27	37.10	17.72
315	37 Leonis.....	4	0.19	10. 8. 50.25	3.234	4		75. 32. 44.08		4	0.19	44.08	17.78
316	Groombridge 1635..	2	0.28	10. 9. 43.63	3.666	2		46. 13. 14.62		2	0.28	14.62	17.78
317	Lalande 19990.....	3	0.23	10. 10. 35.48	3.232	3		75. 20. 16.96		3	0.23	16.96	17.81
318	γ^1 Leonis	5	0.39	10. 11. 55.10	3.321	8		69. 25. 18.47		8	0.44	18.47	18.02
319	42 Leonis.....	3	0.17	10. 13. 58.98	3.236	3		74. 17. 25.10		3	0.17	25.10	17.96
320	B. A. C. 3553	2	0.24	10. 16. 8.92	3.041	2		92. 54. 23.60		2	0.24	23.60	18.03
321	Lalande 20181.....	3	0.27	10. 17. 11.58	3.210	3		76. 31. 53.24		3	0.27	53.24	18.07
322	Lalande 20261.....	3	0.23	10. 19. 29.94	3.204	3		76. 48. 46.61		3	0.23	46.61	18.16
323	B. A. C. 3579.....	8	0.25	10. 21. 0.03	3.220	8		74. 54. 43.65		8	0.25	43.65	18.26
324	Lalande 20333.....	3	0.17	10. 21. 40.25	3.199	3		77. 4. 2.54		3	0.17	2.54	18.24
325	i Leonis	3	0.22	10. 24. 23.85	3.216	3		75. 6. 54.18		3	0.22	54.18	18.38
326	*	1	0.06	10. 24. 45.68	3.209	1		75. 38. 20.14		1	0.06	20.14	18.35
327	ρ Leonis	13	0.24	10. 25. 7.24	3.171	14	1	79. 56. 37.94	36.29	15	0.25	37.83	18.40
328	Lalande 20499.....	4	0.22	10. 28. 26.97	3.206	4		75. 25. 59.57		4	0.22	59.57	18.48
329	B. A. C. 3629.....	3	0.27	10. 28. 48.83	6.453	3		8. 48. 51.01		3	0.27	51.01	18.50
330	33 Sextantis	3	0.21	10. 33. 58.45	3.057	3		90. 58. 31.42		3	0.21	31.42	18.80
331	B. A. C. 3662.....	3	0.24	10. 33. 59.36	3.171	3		78. 29. 57.82		3	0.24	57.82	18.66
332	*	1	0.30	10. 34. 9.95	4.602	1		17. 43. 21.78		1	0.30	21.78	18.67
333	34 Sextantis	12	0.27	10. 35. 5.05	3.105	12		85. 39. 19.73		12	0.27	19.73	18.71
334	Lalande 20748.....	3	0.23	10. 38. 35.62	3.183	3		76. 29. 2.29		3	0.23	2.29	18.80
335	k Leonis.....	3	0.19	10. 38. 41.04	3.187	3		75. 2. 9.18		3	0.19	9.18	18.91
336	l Leonis	14	0.31	10. 41. 34.78	3.163	13	1	78. 41. 1.31	1.07	14	0.32	1.29	18.89
337	Lalande 20876.....	3	0.25	10. 43. 27.81	3.167	3		77. 38. 51.47		3	0.25	51.47	18.95
338	B. A. C. 3761	5	0.16	10. 52. 3.20	3.152	5		77. 30. 51.69		5	0.16	51.69	19.20
339	d Leonis.....	8	0.31	10. 53. 1.16	3.104	8		85. 35. 59.04		8	0.31	59.04	19.26
340	c Leonis.....	1	0.34	10. 53. 10.64	+ 3.119	1		83. 6. 55.67		1	0.34	55.67	+ 19.25

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
341	α Ursæ Majoris....	15	0.67	10. 54. 40.76	+ 3.777	17	11	27. 27. 43.08	43.53	37	0.43	43.16	+ 19.34
	α Ursæ Majoris S.P.					9		42.70					
342	χ Leonis.....	10	0.33	10. 57. 28.96	3.103	11		81. 52. 33.11		11	0.32	33.11	19.40
343	Lalande 21299.....	3	0.24	10. 59. 35.60	3.139	3		78. 59. 56.15		3	0.24	56.15	19.36
344	Lalande 21367.....	3	0.24	11. 2. 47.50	3.141	3		78. 2. 32.61		3	0.24	32.61	19.43
345	Lalande 21371.....	3	0.22	11. 2. 59.09	3.142	3		77. 54. 24.90		3	0.22	24.90	19.44
346	δ Leonis.....	17	0.27	11. 6. 20.31	3.206	13		68. 40. 38.15		13	0.30	38.15	19.65
347	B. A. C. 3837.....	3	0.18	11. 6. 26.60	3.127	3		81. 8. 28.49		3	0.18	28.49	19.63
348	θ Leonis.....	5	0.28	11. 6. 34.46	3.161	5		73. 46. 24.06		5	0.28	24.06	19.54
349	η Leonis.....	3	0.24	11. 8. 13.46	3.149	3		75. 53. 49.36		3	0.24	49.36	19.58
350	ξ^1 Ursæ Majoris ...	1	0.33	11. 10. 22.91	3.222	1		57. 38. 59.52		1	0.33	59.52	20.15
351	ξ^2 Ursæ Majoris....	2	0.31	11. 10. 23.25	3.222	2		57. 39. 1.01		2	0.31	1.01	20.15
352	B. A. C. 3854.....	3	0.29	11. 10. 43.86	3.149	3		77. 13. 0.82		3	0.29	0.82	19.74
353	δ Crateris.....	12	0.32	11. 12. 2.67	2.995	8		103. 59. 20.49		8	0.29	20.49	19.42
354	σ Leonis.....	5	0.31	11. 13. 36.39	3.099	5		83. 10. 16.88		5	0.31	16.88	19.66
355	B. A. C. 3864.....			11. 14. (10.)		1	1	24. 52. 16.15	18.19	2	0.16	17.17	19.71
356	ι Leonis.....	6	0.32	11. 16. 18.67	3.137	5		78. 40. 2.01		5	0.20	2.01	19.75
357	B. A. C. 3882.....	3	0.28	11. 17. 24.45	3.126	3		77. 46. 5.32		3	0.28	5.32	19.74
358	B. A. C. 3892.....	3	0.10	11. 18. 44.29	3.123	3		80. 32. 15.85		3	0.10	15.85	19.89
359	τ Leonis.....	8	0.37	11. 20. 25.69	3.091	8		86. 20. 25.38		8	0.37	25.38	19.78
360	85 Leonis.....	3	0.23	11. 22. 5.28	3.138	2		73. 46. 51.08		2	0.26	51.08	19.81
361	B. A. C. 3911.....	3	0.27	11. 22. 7.37	3.107	3		81. 35. 44.72		3	0.27	44.72	19.85
362	λ Draconis.....			11. 22. (40.)		1	1	19. 51. 49.18	52.38	2	0.17	50.78	19.87
363	88 Leonis.....	2	0.18	11. 24. 12.45	3.109	2		74. 49. 22.60		2	0.19	22.60	20.01
364	W. B. XI. 486....	1	0.22	11. 28. 9.00	3.025	1		103. 52. 32.42		1	0.22	32.42	19.86
365	B. A. C. 3940.....	2	0.26	11. 29. 3.83	3.103	2		83. 4. 55.71		2	0.26	55.71	19.91
366	ν Leonis.....	9	0.29	11. 29. 28.40	3.074	6		90. 1. 4.90		6	0.31	4.90	19.87
367	W. B. XI. 534....	1	0.27	11. 30. 40.07	3.079	1		87. 15. 54.09		1	0.27	54.09	19.89
368	ω Virginis.....	3	0.20	11. 30. 55.81	3.098	3		81. 3. 29.17		3	0.20	29.17	19.94
369	B. A. C. 3955.....	3	0.28	11. 30. 56.55	3.074	3		91. 37. 43.03		3	0.28	43.03	19.93
370	B. A. C. 3962.....	3	0.29	11. 32. 54.96	3.084	3		88. 14. 19.66		3	0.29	19.66	19.98
371	*	1	0.25	11. 33. 15.31	3.077	1		87. 38. 46.55		1	0.26	46.55	19.92
372	B. A. C. 3971.....	2	0.25	11. 34. 39.35	3.060	2		84. 26. 41.21		2	0.25	41.21	19.92
373	*	1	0.16	11. 37. 37.05	3.075	1		88. 16. 45.49		1	0.16	45.49	19.96
374	W. B. XI. 657.....	1	0.24	11. 37. 38.11	3.075	1		88. 16. 49.16		1	0.24	49.16	19.96
375	ξ Virginis.....	1	0.19	11. 37. 45.54	3.097	1		81. 55. 49.73		1	0.19	49.73	20.00
376	ν Virginis.....	1	0.35	11. 38. 21.20	3.093			82. 39.					
377	93 Leonis.....	2	0.31	11. 40. 26.97	3.106	3	1	68. 58. 12.17	8.92	4	0.31	11.36	19.98
378	Lalande 22308.....	2	0.30	11. 41. 27.79	3.101	2		74. 40. 56.37		2	0.30	56.37	19.99
379	β Leonis.....	16	0.47	11. 41. 36.59	3.066	16	2	74. 36. 43.89	43.24	18	0.43	43.82	20.08
380	β Virginis.....	5	0.30	11. 43. 5.37	3.128	5		87. 24. 44.80		5	0.30	44.80	20.28
381	{Groombridge 1830} {B. A. C. 4010.....}	2	0.23	11. 44. 33.11	3.487	2		51. 14. 5.20		2	0.23	5.20	25.71
382	*	1	0.16	11. 45. 36.70	3.049	1		104. 55. 56.63		1	0.16	56.63	20.02
383	γ Ursæ Majoris....	4	0.68	11. 46. 7.85	3.197	4		35. 29. 37.54		6	0.72	37.50	20.03
	γ Ursæ Majoris S.P.					2		37.34					
384	B. A. C. 4020.....	3	0.27	11. 46. 24.15	3.085	3		92. 57. 45.98		3	0.27	45.98	20.08
385	W. B. XI. 804.....	1	0.24	11. 46. 52.95	3.086	1		79. 8. 25.59		1	0.24	25.59	20.02
386	Lalande 22547.....	3	0.28	11. 51. 13.25	3.113	3		51. 18. 40.26		3	0.28	40.26	20.04
387	*	1	0.29	11. 51. 27.79	+ 3.089	1		70. 16. 30.26		1	0.30	30.26	+ 20.04

373. It appears probable that this Star is identical with the following, W. B. XI. 657, and that an error of 1" has been made in the Transit Observation.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
388	B. A. C. 4043	3	0.26	11. 51. 35.34	+ 3.055	3		88. 39. 28.01	"	3	0.26	28.01	+ 19.98
389	W. B. XI. 890	1	0.13	11. 51. 57.47	3.058	1		105. 14. 22.28		1	0.13	22.28	20.04
390	π Virginis	15	0.28	11. 53. 23.44	3.079	13		82. 34. 17.82		13	0.26	17.82	20.10
391	B. A. C. 4074			11. 58. (20.)		1	1	26. 15. 3.58	4.20	2	0.27	3.89	20.05
392	ε Corvi.	9	0.30	12. 2. 37.41	3.077	8		111. 48. 27.24		8	0.31	27.24	20.03
393	*	1	0.16	12. 3. 49.52	3.071	1		91. 7. 16.30		1	0.16	16.30	20.05
394	4 Comæ	3	0.26	12. 4. 26.47	3.056	4	1	63. 18. 58.68	58.04	5	0.30	58.55	20.04
395	*	1	0.23	12. 5. 31.77	3.059	1		70. 12. 48.80		1	0.24	48.80	20.05
396	*	1	0.15	12. 7. 33.59	3.072	1		91. 40. 32.19		1	0.15	32.19	20.04
397	B. A. C. 4122	3	0.27	12. 8. 8.87	2.933	5	2	18. 59. 13.13	13.44	7	0.30	13.22	20.04
398	Lalande 22999	1	0.13	12. 9. 15.10	3.073	1		91. 55. 34.25		1	0.13	34.25	20.04
399	η Virginis	15	0.28	12. 12. 26.27	3.067	14		89. 51. 17.81		14	0.29	17.81	20.06
400	13 Comæ	3	0.26	12. 16. 58.88	3.021	4	2	63. 5. 28.30	30.09	6	0.28	28.90	20.01
401	δ Corvi.	12	0.29	12. 22. 18.92	3.106	11		105. 42. 7.86		11	0.28	7.86	20.11
402	β Corvi.	12	0.28	12. 26. 43.59	3.132	11		112. 35. 19.20		11	0.28	19.20	19.99
403	κ Draconis	3	0.31	12. 27. 13.72	2.608	8	5	19. 24. 23.19	24.00	13	0.30	23.50	19.96
404	*	1	0.16	12. 28. 54.95	3.016	1		72. 4. 20.81		1	0.16	20.81	19.90
405	W. B. XII. 619....	3	0.25	12. 36. 41.77	3.079	3		92. 2. 29.80		3	0.25	29.80	19.80
406	δ Virginis	22	0.32	12. 48. 15.01	3.023	18		85. 48. 28.89		18	0.33	28.89	19.71
407	12 Can. Ven. (1st star)			12. 49. (10.)		1		50. 53. 45.04		1	0.27	45.04	19.60
408	12 Can. Ven. (2d star)	1	0.24	12. 49. 11.50	2.819	4	3	50. 53. 31.92	31.71	7	0.32	31.83	19.54
409	*	1	0.26	12. 50. 18.95	3.116	1		98. 51. 0.91		1	0.26	0.91	19.57
410	W. B. XII. 880....	1	0.25	12. 51. 33.23	3.118	1		99. 3. 8.89		1	0.25	8.89	19.55
411	*	1	0.24	12. 57. 51.77	3.126	1		99. 19. 49.84		1	0.24	49.84	19.42
412	θ Virginis	4	0.44	13. 2. 23.65	3.101	4		94. 45. 30.91		4	0.44	30.91	19.36
413	*	1	0.22	13. 3. 43.13	3.134	1		99. 44. 10.64		1	0.22	10.64	19.28
414	Lalande 24610....	2	0.32	13. 8. 29.55	3.104	2		94. 53. 39.21		2	0.32	39.21	19.17
415	Spica	42	0.38	13. 17. 30.35	3.150	31		100. 23. 51.57		31	0.38	51.57	18.95
416	W. B. XIII. 364...	2	0.28	13. 22. 37.09	3.015	2		83. 13. 58.16		2	0.28	58.16	18.77
417	B. A. C. 4515	2	0.35	13. 24. 16.87	3.037	2		91. 34. 28.69		2	0.35	28.69	18.49
418	ξ Virginis	15	0.35	13. 27. 15.44	3.055	11		89. 50. 52.08		11	0.32	52.08	18.56
419	80 Virginis	3	0.27	13. 27. 55.74	3.114	3		94. 39. 1.81		3	0.27	1.81	18.54
420	B. A. C. 4559	2	0.31	13. 32. 22.62	2.964	3		78. 30. 38.54		3	0.32	38.54	18.44
421	B. A. C. 4593	2	0.33	13. 39. 47.94	3.135	2		95. 58. 24.69		2	0.33	24.69	18.23
422	τ Bootis	10	0.38	13. 40. 19.43	2.856	12	5	71. 48. 50.09	49.93	17	0.36	50.04	18.11
423	η Ursæ Majoris	11	0.85	13. 41. 47.02	2.376	4		39. 57. 24.56		11	0.85	23.77	18.14
424	W. B. XIII. 720...	1	0.34	13. 41. 47.04	2.962	1		79. 11. 49.59		1	0.34	49.59	18.11
425	B. A. C. 4621	2	0.32	13. 43. 8.11	2.866	2		70. 38. 36.29		2	0.32	36.29	18.06
426	p Virginis	2	0.37	13. 47. 12.56	3.082	2		90. 46. 57.19		2	0.37	57.19	17.94
427	η Bootis	17	0.45	13. 47. 44.00	2.859	15	3	70. 52. 7.22	6.86	18	0.39	7.16	18.22
428	τ Virginis	15	0.40	13. 54. 13.11	3.050	6		87. 44. 48.98		6	0.37	48.98	17.68
429	π Hydræ	3	0.34	13. 58. 4.06	3.399	2		115. 58. 39.03		2	0.34	39.03	17.59
430	95 Virginis	5	0.35	13. 58. 59.77	3.164	5		98. 36. 53.51		5	0.35	53.51	17.39
431	B. A. C. 4713	14	0.43	14. 4. 52.53	3.032	5		86. 54. 4.06		5	0.43	4.06	17.19
432	κ Virginis	6	0.33	14. 5. 6.81	3.195	6		99. 35. 30.35		6	0.33	30.35	17.13
433	3 Ursæ Minoris			14. 5. (50.)		1	1	14. 42. 51.93	52.70	2	0.37	52.32	17.04
434	Arcturus	35	0.57	14. 9. 0.25	2.733	22	1	70. 3. 20.28	18.71	23	0.68	20.21	18.92
435	λ Virginis	3	0.26	14. 11. 13.08	+ 3.237	3		102. 41. 47.65		3	0.26	47.65	+ 16.83

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
436	ν^2 Virginis	10	0.43	^h 14. ^m 14. ^s 27.32	+ 3.084	3		91. 19. 5.59	"	3	0.42	5.59	+ 16.73
437	*	1	0.29	14. 16. 45.85	2.956	1		81. 18. 27.25		1	0.29	27.25	16.59
438	f Bootis	6	0.36	14. 19. 39.91	2.795	6		70. 6. 52.06		6	0.36	52.06	16.48
439	ρ Virginis	13	0.42	14. 20. 40.98	3.090	5		91. 34. 15.86		5	0.43	15.86	16.41
440	ρ Bootis	16	0.42	14. 25. 32.27	2.590	8	2	58. 59. 8.47	8.36	10	0.35	8.45	16.01
441	Lalande 26560.....	1	0.37	14. 26. 0.08	2.595	1		59. 5. 39.09		1	0.37	39.09	16.12
442	Oeltz. Arg. 14703..	2	0.38	14. 30. 2.72	1.406	1		26. 3. 41.49		1	0.38	41.49	15.91
443	Oeltz. Arg. 14719..	2	0.37	14. 31. 5.44	1.402	2		26. 8. 38.91		2	0.37	38.91	15.85
444	ζ Bootis	15	0.43	14. 34. 10.69	2.861	5		75. 38. 34.86		5	0.43	34.86	15.69
445	Lalande 26865.....	2	0.38	14. 36. 36.95	1.939	2		36. 43. 38.35		2	0.38	38.35	15.55
446	5 Libræ	3	0.37	14. 37. 55.14	3.298	3		104. 50. 28.40		3	0.38	28.40	15.51
447	ϵ Bootis	14	0.50	14. 38. 36.70	2.622	4		62. 18. 29.30		4	0.77	29.30	15.44
448	α Libræ	19	0.40	14. 42. 48.47	3.307	10		105. 25. 55.49		10	0.32	55.49	15.23
449	ξ^2 Libræ	18	0.40	14. 48. 51.10	+ 3.245	8		100. 49. 3.13		8	0.33	3.13	14.89
450	β Ursæ Minoris....	5	0.79	14. 51. 10.80	- 0.269	8	3	15. 14. 52.78	52.81	11	0.56	52.79	14.76
451	δ Libræ	16	0.43	14. 53. 10.59	+ 3.197	5		97. 56. 11.94		5	0.42	11.94	14.61
452	ψ Bootis	8	0.33	14. 58. 11.45	2.572	7		62. 28. 50.54		7	0.32	50.54	14.29
453	ν^1 Libræ	1	0.28	14. 58. 29.47	3.336	1		105. 41. 16.40		1	0.28	16.40	14.31
454	ν^2 Libræ	14	0.44	14. 58. 40.46	3.336	5		105. 54. 56.98		5	0.43	56.98	14.28
455	ν^1 Libræ	14	0.44	15. 3. 54.38	3.408	3		109. 14. 8.54		3	0.46	8.54	13.96
456	W. B. XV. 74	3	0.38	15. 5. 20.14	3.236	3		99. 46. 22.09		3	0.38	22.09	13.85
457	*			15. 5. (20.)		1		99. 48. 27.76		1	0.38	27.76	13.85
458	β Libræ	14	0.44	15. 9. 9.33	3.220	2		98. 50. 27.42		2	0.44	27.42	13.60
459	δ Bootis	1	0.38	15. 9. 37.08	2.421	2	1	56. 8. 17.46	17.56	3	0.38	17.49	13.66
460	*	1	0.37	15. 12. 5.38	2.302	1		52. 17. 57.43		1	0.37	57.43	13.41
461	W. B. XV. 210	1	0.38	15. 12. 17.27	3.309	1		103. 26. 2.98		1	0.38	2.98	13.40
462	σ^2 Libræ	9	0.41	15. 14. 53.56	3.334	3		104. 36. 34.17		3	0.25	34.17	13.23
463	ζ^1 Libræ	2	0.40	15. 20. 1.75	3.375	2		106. 12. 14.83		2	0.40	14.83	12.03
464	γ Libræ	2	0.24	15. 27. 21.97	3.344	2		104. 17. 57.01		2	0.24	57.01	12.38
465	α Coronæ	22	0.59	15. 28. 30.48	2.538	14		62. 47. 28.57		14	0.67	28.57	12.37
466	η Libræ	3	0.21	15. 35. 51.95	3.371	3		105. 12. 14.04		3	0.21	14.04	11.84
467	α Serpentis	14	0.59	15. 37. 4.73	2.951	7		83. 6. 43.17		7	0.73	43.17	11.64
468	χ Lupi	1	0.38	15. 41. 41.59	3.790	1		123. 10. 41.27		1	0.38	41.27	11.44
469	ϵ Serpentis	5	0.54	15. 43. 32.43	2.989	3		85. 4. 46.66		3	0.59	46.66	11.21
470	θ Libræ	2	0.28	15. 45. 31.14	3.410	2		106. 17. 48.45		2	0.28	48.45	10.97
471	γ Serpentis	3	0.60	15. 49. 42.73	+ 2.769	3	1	73. 51. 32.89	32.91	4	0.55	32.90	12.04
472	ζ Ursæ Minoris....	1	0.38	15. 50. 22.22	- 2.322	2	1	11. 45. 31.32	30.57	3	0.39	31.07	10.82
473	δ Scorpil.	1	0.49	15. 51. 42.46	+ 3.536	1		112. 12. 6.18		1	0.49	6.18	10.66
474	β^1 Scorpil.	2	0.50	15. 56. 57.19	3.478	1		109. 24. 6.34		1	0.51	6.34	10.28
475	ω^2 Scorpil.	1	0.49	15. 58. 50.89	3.509	1		110. 28. 11.05		1	0.49	11.05	10.13
476	Lalande 29490.....	1	0.49	16. 4. 10.52	3.349	1		103. 21. 23.13		1	0.49	23.13	9.71
477	δ Ophiuchi	4	0.46	16. 6. 41.89	3.138	4		93. 18. 52.92		4	0.48	52.92	9.62
478	σ Scorpil.	1	0.21	16. 12. 19.11	3.635	1		115. 14. 18.55		1	0.21	18.55	9.08
479	γ Herculis	6	0.52	16. 15. 28.91	2.645	7	1	70. 30. 3.54	4.68	8	0.51	3.68	8.79
480	Antares	6	0.43	16. 20. 27.72	3.666	5		116. 6. 12.13		5	0.41	12.13	8.44
481	τ Scorpil.	1	0.28	16. 26. 48.09	3.726	1		117. 54. 27.56		1	0.29	27.56	7.92
482	ζ Ophiuchi	2	0.48	16. 29. 7.41	3.299	1		100. 16. 1.59		1	0.51	1.59	7.71
483	m^1 Herculis	1	0.51	16. 33. 20.44	2.977	1		85. 30. 14.64		1	0.51	14.64	7.39
484	m^2 Herculis	1	0.51	16. 33. 23.94	2.978	1		85. 29. 29.75		1	0.51	29.75	7.43
485	39 Herculis	2	0.42	16. 35. 41.52	+ 2.435	2		62. 47. 55.82		2	0.42	55.82	+ 7.24

445. Of the 8th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—*continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
486	ζ Herculis	2	0.45	^h 16. 35. 46 ^s 96	+ 2.265			[°] 58. 8.	"			"	"
487	B. A. C. 5634	1	0.51	16. 41. 14.25	2.817	1		78. 36. 13.77		1	0.51	13.77	+ 6.75
488	21 Ophiuchi	5	0.42	16. 44. 0.80	3.042			88. 32.					
489	23 Ophiuchi	2	0.44	16. 46. 47.67	3.203	2		95. 54. 40.61		2	0.44	40.61	6.39
490	κ Ophiuchi	11	0.45	16. 50. 45.57	2.838	3	1	80. 23. 41.33	40.49	4	0.53	41.12	5.94
491	B. A. C. 5726	2	0.42	16. 53. 22.41	2.917	2		83. 11. 37.58		2	0.42	37.58	5.75
492	B. A. C. 5732	2	0.49	16. 54. 54.93	2.723	2		74. 50. 1.01		2	0.49	1.01	5.62
493	B. A. C. 5748	8	0.46	16. 56. 28.09	+ 3.316	2		100. 52. 44.75		2	0.53	44.75	5.62
494	ε Ursæ Minoris	3	0.29	17. 1. 5.54	- 6.509	4	3	7. 43. 48.77	48.04	9	0.45	48.48	5.10
495	η Ophiuchi	13	0.46	17. 2. 0.51	+ 3.435	3		^s 48.57		3	0.54	23.60	4.90
496	*	1	0.38	17. 7. 7.04	+ 3.461	1		106. 42. 15.03		1	0.38	15.03	4.59
497	α ¹ Herculis	25	0.53	17. 7. 59.54	2.732	15		75. 26. 23.52		15	0.63	23.52	4.45
498	α ² Herculis	3	0.57	17. 7. 59.84	2.732	4		75. 26. 25.93		4	0.56	25.93	4.52
499	W. B. XVII. 127 ...	1	0.55	17. 8. 13.05	3.096	1		91. 7. 28.12		1	0.55	28.12	4.49
500	*	1	0.37	17. 8. 28.72	3.454	1		106. 22. 55.70		1	0.37	55.70	4.47
501	θ Ophiuchi	11	0.42	17. 13. 2.84	3.680	2		114. 50. 58.29		2	0.56	58.29	4.13
502	δ Ophiuchi	1	0.21	17. 17. 27.48	3.660	1		114. 2. 9.36		1	0.21	9.36	3.78
503	σ Ophiuchi	17	0.52	17. 19. 16.33	2.977	9		85. 43. 43.54		9	0.55	43.54	3.52
504	c ² Ophiuchi	10	0.47	17. 22. 30.62	3.660	3		113. 50. 40.95		3	0.53	40.95	3.29
505	β Draconis	1	0.58	17. 27. 8.20	1.350	1		37. 35. 20.01		1	0.58	20.01	2.86
506	α Ophiuchi	34	0.53	17. 28. 9.54	2.780	26	1	77. 19. 48.42	48.71	27	0.56	48.43	2.97
507	ο Serpentis	13	0.46	17. 33. 12.63	3.369	3		102. 47. 33.06		3	0.55	33.06	2.36
508	β Ophiuchi	19	0.49	17. 36. 15.67	+ 2.964	11		85. 22. 3.83		11	0.52	3.83	1.90
509	29 Draconis	2	0.52	17. 36. 43.59	- 1.676	2		15. 41. 3.80		2	0.51	3.80	2.01
510	γ Ophiuchi	12	0.45	17. 40. 34.38	+ 3.004	3		87. 14. 0.96		3	0.51	0.96	1.77
511	μ Herculis	7	0.62	17. 40. 44.81	2.344	9	2	62. 11. 28.04	26.73	11	0.59	27.80	2.41
512	B. A. C. 6049	12	0.46	17. 44. 56.93	3.324	4		100. 51. 32.42		4	0.50	32.42	1.50
513	4 Sagittarii	1	0.29	17. 50. 52.95	3.661	1		113. 47. 50.70		1	0.29	50.70	0.81
514	ξ Herculis	1	0.57	17. 52. 5.54	2.332	1		60. 44. 4.94		1	0.57	4.94	0.72
515	66 Ophiuchi	2	0.55	17. 53. 2.02	2.971	2		85. 37. 5.75		2	0.55	5.75	0.60
516	γ Draconis	2	0.16	17. 53. 13.05	1.393	2		38. 29. 33.89		2	0.16	33.89	0.63
517	γ Draconis S.P.	3	0.49	17. 53. 19.99	3.010	2		87. 3. 26.27		2	0.54	26.27	0.61
518	Lalande 32990	1	0.57	17. 53. 22.26	3.002	1		87. 4. 11.04		1	0.57	11.04	0.58
519	93 Herculis	1	0.60	17. 53. 33.49	2.667	1		73. 14. 15.49		1	0.60	15.49	0.49
520	γ ¹ Sagittarii	1	0.62	17. 55. 41.64	3.840	1		119. 34. 54.18		1	0.62	54.18	+ 0.46
521	70 Ophiuchi	1	0.41	17. 58. 4.57	3.013			87. 28. ...					
522	72 Ophiuchi	12	0.56	18. 0. 25.72	2.844	9		80. 27. 12.18		9	0.59	12.18	- 0.12
523	μ Sagittarii	19	0.55	18. 5. 1.96	3.587	14		111. 5. 31.65		14	0.59	31.65	0.45
524	δ Sagittarii	2	0.67	18. 11. 38.74	3.842	2		119. 53. 4.66		2	0.67	4.66	0.96
525	*	1	0.55	18. 13. 15.62	3.267	1		98. 21. 49.58		1	0.55	49.58	1.16
526	η Serpentis	9	0.61	18. 13. 45.32	+ 3.102	8		92. 55. 58.62		8	0.61	58.62	0.56
527	37 Draconis	1	0.61	18. 16. 8.08	- 0.353	1		21. 17. 50.71		1	0.61	50.71	1.35
528	38 Draconis	1	0.61	18. 17. 50.02	- 0.358	1		21. 18. 59.88		1	0.61	59.88	1.48
529	λ Sagittarii	3	0.59	18. 18. 57.60	+ 3.707	1		115. 29. 50.70		1	0.67	50.70	1.43
530	δ Ursæ Minoris	22	0.32	18. 19. 25.79	- 19.319	21	2	3. 24. 3.20	4.00	41	0.37	3.23	1.70
	δ Ursæ Minoris S.P.					18		3.18					
531	α Lyræ	24	0.55	18. 31. 59.75	+ 2.031	23		51. 20. 59.21		23	0.52	59.21	3.09
532	β ¹ Lyræ	34	0.63	18. 44. 41.46	+ 2.213	36	6	56. 48. 14.42	14.62	42	0.63	14.45	- 3.87

496. Of the 11-12th magnitude.

491. The N.P.D. of this star given above differs more than 30" from the B.A.C.

517. Of the 5-6th magnitude.

518. Of the 8th magnitude.

525. Of the 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—continued.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
533	β^2 Lyrae	17	0.63	18. 44. 43.35	+ 2.213	17	3	56. 48. 53.49	55.28	20	0.62	53.76	— 3.89
534	σ Sagittarii	1	0.59	18. 46. 12.58	3.729	1		116. 28. 20.84		1	0.59	20.84	3.90
535	ϵ Aquilæ	10	0.58	18. 52. 59.80	2.723	8	1	75. 7. 36.00	35.58	9	0.58	35.95	4.50
536	*	1	0.66	18. 53. 1.36	2.769	1		76. 56. 1.03		1	0.66	1.03	4.60
537	ζ Sagittarii	1	0.59	18. 53. 19.09	3.828	1		120. 5. 1.56		1	0.59	1.56	4.59
538	W. B. XVIII. 1364.	1	0.71	18. 53. 38.43	2.866	1		80. 50. 15.90		1	0.71	15.90	4.65
539	ζ Aquilæ	26	0.62	18. 58. 42.01	2.755	26		76. 21. 1.03		26	0.62	1.03	5.02
540	ω Aquilæ	19	0.66	19. 10. 57.81	2.818	22	4	78. 39. 52.37	52.40	26	0.68	52.37	6.18
541	δ Aquilæ	13	0.60	19. 18. 8.16	3.025	8		87. 10. 21.47		8	0.60	21.47	6.83
542	α Vulpeculæ	6	0.70	19. 22. 37.89	2.495	8	2	65. 37. 40.92	40.85	10	0.72	40.91	6.98
543	μ Aquilæ	17	0.70	19. 26. 57.42	2.934	16		82. 55. 39.65		16	0.70	39.65	7.34
544	h^2 Sagittarii	2	0.67	19. 27. 49.03	3.663	2		115. 12. 4.85		2	0.67	4.85	7.50
545	γ Aquilæ	41	0.68	19. 39. 19.11	2.855	29		79. 44. 21.75		29	0.69	21.75	8.43
546	α Aquilæ	44	0.58	19. 43. 39.55	2.929	33		81. 30. 50.50		33	0.52	50.50	9.15
547	*	2	0.67	19. 44. 7.36	3.502	2		109. 44. 37.34		2	0.67	37.34	8.80
548	*	2	0.66	19. 44. 41.13	3.499	3		109. 38. 12.30		3	0.66	12.30	8.85
549	b Sagittarii	2	0.82	19. 47. 59.00	3.695	2		117. 33. 13.66		2	0.82	13.66	9.11
550	β Aquilæ	29	0.66	19. 48. 8.46	2.950	17		83. 57. 16.82		17	0.67	16.82	8.65
551	c Sagittarii	16	0.70	19. 53. 40.43	3.704	15		118. 6. 41.81		15	0.69	41.81	9.60
552	ρ Draconis	1	0.78	20. 2. 9.00	0.299	8	10	22. 32. 33.02	32.70	18	0.68	32.84	10.23
553	θ Aquilæ	8	0.72	20. 3. 46.21	+ 3.103	5		91. 15. 4.00		5	0.74	4.00	10.34
554	λ Ursæ Minoris	10	0.43	20. 9. 24.97	- 54.516	10	5	1. 7. 38.68	38.23	24	0.50	38.47	10.72
555	λ Ursæ Minoris S.P.					8	1	38.31	38.84				
555	α^1 Capricorni	3	0.71	20. 9. 33.13	+ 3.334	2		102. 57. 20.88		2	0.65	20.88	10.77
556	α^2 Capricorni	5	0.71	20. 9. 57.05	3.335	6		102. 59. 38.63		6	0.72	38.63	10.78
557	B. A. C. 6992	4	0.68	20. 12. 34.13	3.379	2		105. 14. 29.99		2	0.63	29.99	10.96
558	β Capricorni	8	0.70	20. 12. 48.27	3.380	8		105. 14. 19.67		8	0.70	19.67	11.03
559	π Capricorni	2	0.75	20. 18. 57.70	3.445	2		108. 41. 12.72		2	0.75	12.72	11.48
560	ϵ Delphini	18	0.73	20. 26. 14.26	2.868	17	6	79. 11. 24.76	25.02	23	0.71	24.83	11.94
561	*	1	0.73	20. 28. 13.92	3.418	1		108. 1. 56.03		1	0.73	56.03	12.09
562	*	1	0.72	20. 28. 19.83	3.419	1		108. 5. 17.28		1	0.72	17.28	12.09
563	*	1	0.70	20. 28. 56.38	3.420	1		108. 10. 22.92		1	0.70	22.92	12.14
564	*	1	0.73	20. 29. 5.15	3.416	1		107. 58. 50.19		1	0.73	50.19	12.15
565	ν Capricorni	2	0.67	20. 31. 44.01	3.425	2		108. 38. 57.21		2	0.67	57.21	12.38
566	B. A. C. 7146	8	0.70	20. 32. 18.66	2.784	4	1	74. 40. 18.21	17.67	5	0.77	18.10	12.39
567	α Delphini	11	0.72	20. 32. 51.44	2.791	7	1	74. 36. 1.11	1.44	8	0.64	1.15	12.42
568	α Cygni	15	0.34	20. 36. 27.37	2.042	12	1	45. 14. 22.08	21.92	13	0.38	22.07	12.66
569	α Cygni S.P.					3		24.23			0.18		
569	ψ Capricorni	4	0.71	20. 37. 26.65	3.569	4		115. 47. 31.87		4	0.71	31.87	12.57
570	ϵ Aquarii	11	0.73	20. 39. 46.15	3.259	9		100. 1. 38.14		9	0.74	38.14	12.85
571	32 Vulpeculæ	14	0.71	20. 48. 20.33	2.557	11	2	62. 29. 43.27	42.44	13	0.75	43.14	13.48
572	*	2	0.66	20. 50. 0.86	3.377	3		107. 15. 12.29		3	0.65	12.29	13.55
573	η Capricorni	1	0.82	20. 56. 5.42	3.429	1		110. 25. 46.56		1	0.82	46.56	13.93
574	θ Capricorni	17	0.71	20. 57. 44.05	3.386	13		107. 48. 35.73		13	0.72	35.73	14.01
575	61 Cygni (1st Star)	16	0.69	21. 0. 21.41	2.673	15		51. 57. 58.34		15	0.69	58.34	17.43
576	61 Cygni (2d Star).	16	0.69	21. 0. 22.88	2.673	12		51. 58. 2.76		12	0.68	2.76	17.43
577	*	1	0.57	21. 3. 57.23	3.348	1		106. 38. 9.93		1	0.57	9.93	14.42
578	ζ Cygni	28	0.61	21. 6. 43.48	2.550	26	1	60. 22. 11.14	10.75	27	0.60	11.13	14.53
579	*	1	0.56	21. 8. 15.36	3.340	1		106. 28. 0.45		1	0.56	0.45	14.68
580	α Equulei	4	0.79	21. 8. 31.46	+ 3.005	5		85. 21. 11.39		5	0.80	11.39	— 14.62

548. Of the 9-10th magnitude.

577. Of the 11th magnitude.

579. Of the 10th magnitude.

CATALOGUE OF THE CONCLUDED MEAN R.A. AND MEAN N.P.D.—*continued.*

No.	Star's Name.	Number of Obs. of R.A.	Fraction of Year for Mean of Obs.	Mean R.A. 1854, Jan. 1.	Annual Variation in R.A.	Number of Obs. of N.P.D.		Mean N.P.D. 1854, Jan. 1.		Whole Number of Obs. of N.P.D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N.P.D.	Annual Variation in N.P.D.
						D.	R.	D.	R.				
581	Lalande 41317.....	8	0.64	21. 9. 45.29	+ 3.339	6		106. 29. 53.94	"	6	0.63	53.94	— 14.77
582	Capricorni.....	10	0.77	21. 14. 6.71	3.356	6		107. 27. 12.49		6	0.76	12.49	15.08
583	α Cephei.....	9	0.30	21. 15. 5.55	1.438	10	2	28. 1. 55.36	54.20	12	0.41	55.17	15.08
584	ζ Capricorni.....	1	0.60	21. 18. 19.39	3.442	1		113. 2. 27.04		1	0.60	27.04	15.32
585	β Aquarii.....	9	0.71	21. 23. 52.18	3.167	6		96. 12. 39.44		6	0.73	39.44	15.61
586	β^1 Cephei.....	2	0.76	21. 26. 43.41	0.806	2		20. 4. 54.08		2	0.76	54.08	15.73
587	β^2 Cephei.....	17	0.27	21. 26. 45.66	0.805	22	7	20. 4. 47.12	46.95	30	0.58	47.09	15.69
588	ϵ Capricorni.....	1	0.75	21. 28. 53.93	3.374	1		47.45		1	0.75	4.23	15.87
589	ξ Aquarii.....	4	0.74	21. 29. 58.56	3.202	4		110. 7. 4.23		4	0.74	22.90	15.90
590	ϵ Pegasi.....	20	0.67	21. 37. 0.94	2.951	19	2	98. 30. 22.90	32.49	21	0.67	32.79	16.30
591	δ Capricorni.....	5	0.68	21. 38. 58.59	3.322	4		80. 47. 32.82		4	0.74	14.82	16.13
592	*	1	0.84	21. 44. 10.20	1.084	1		106. 47. 14.82		1	0.75	9.11	16.64
593	*	4	0.75	21. 44. 26.08	1.079	4		20. 36. 9.11		4	0.75	32.99	16.65
594	*	1	0.84	21. 44. 50.90	1.089	1		20. 31. 32.99		1	0.75	32.99	16.65
595	16 Pegasi.....	3	0.78	21. 46. 25.32	2.730	6	5	20. 34. 27.99	36.77	11	0.83	27.99	16.67
596	*	1	0.69	21. 46. 27.46	1.459	1		64. 45. 35.99		1	0.69	36.34	16.73
597	*	3	0.76	21. 46. 42.78	1.516	2		24. 32. 39.12		2	0.78	39.12	16.75
598	B. A. C. 7658.....	4	0.67	21. 52. 32.31	1.703	4		24. 47. 32.16		4	0.67	32.16	16.76
599	29 Aquarii (1st star)	3	0.67	21. 54. 26.61	3.294	4		27. 4. 7.53		4	0.71	7.53	17.01
600	29 Aquarii (as one mass)	2	0.75	21. 54. 26.87	3.294	1		107. 39. 58.58		1	0.69	58.58	17.20
601	29 Aquarii (2d star)	3	0.67	21. 54. 26.88	3.294	3		107. 39. 57.80		3	0.67	57.80	17.20
602	α Aquarii.....	17	0.76	21. 58. 17.01	3.083	10		107. 39. 56.62		10	0.81	56.62	17.20
603	ι Aquarii.....	3	0.73	21. 58. 32.80	3.251	4		91. 1. 37.68		4	0.77	37.68	17.30
604	18 Cephei.....	2	0.72	21. 59. 30.76	1.770	5	3	104. 34. 33.13	22.08	8	0.76	33.13	17.26
605	ι Pegasi.....			22. 0. (10.)		1	1	27. 35. 22.50	59.07	2	0.83	22.34	17.34
606	Oeltz. Arg. 23480..	3	0.78	22. 2. 49.28	2.106	3		65. 21. 61.60		3	0.78	61.60	17.43
607	*	1	0.85	22. 3. 36.80	2.108	1		34. 8. 8.26		1	0.83	8.26	17.49
608	B. A. C. 7754.....	1	0.85	22. 6. 33.52	2.150	1		34. 0. 36.36		1	0.85	36.36	17.53
609	θ Aquarii.....	11	0.70	22. 9. 7.55	3.175	9		33. 53. 8.67		9	0.74	8.67	17.79
610	γ Aquarii.....	18	0.75	22. 14. 6.84	3.106	16		98. 30. 30.53		16	0.74	30.53	17.76
611	σ Aquarii.....	3	0.73	22. 22. 55.02	3.184	3		92. 7. 16.46		3	0.73	16.46	18.00
612	β Piscis Australis..	4	0.77	22. 23. 11.49	3.436	5		101. 25. 24.93		5	0.75	24.93	18.37
613	η Aquarii.....	13	0.79	22. 27. 51.16	3.087	9		123. 5. 34.88		9	0.79	34.88	18.27
614	ζ Pegasi.....	20	0.75	22. 34. 10.91	2.990	16		90. 52. 7.35		16	0.77	7.35	18.41
615	μ Pegasi.....	13	0.78	22. 42. 57.62	2.888	10	1	79. 55. 46.94	8.47	11	0.77	46.94	18.69
616	λ Aquarii.....	10	0.78	22. 44. 59.70	3.133	5		66. 10. 6.92		5	0.81	7.06	18.92
617	δ Aquarii.....	3	0.73	22. 46. 53.80	3.194	3		98. 21. 20.34		3	0.83	20.34	19.06
618	Fomalhaut.....	20	0.76	22. 49. 34.42	3.334	20		106. 35. 45.25		20	0.73	45.25	19.07
619	*	1	0.66	22. 54. 32.01	3.156	1		120. 23. 41.35		1	0.76	41.35	18.97
620	α Pegasi.....	21	0.68	22. 57. 29.43	2.983	11	1	102. 39. 24.81	45.30	12	0.66	24.81	19.24
621	*	1	0.64	23. 0. 13.99	3.145	1		75. 34. 46.38		12	0.65	46.29	19.31
622	*	1	0.64	23. 1. 53.75	3.142	1		102. 7. 47.28		1	0.64	47.28	19.38
623	ϕ Aquarii.....	6	0.65	23. 6. 45.53	3.114	5		101. 57. 47.52		1	0.64	47.52	19.41
624	γ Piscium.....	10	0.77	23. 9. 35.84	3.110	10		96. 50. 7.67		5	0.65	7.67	19.35
625	ψ^2 Aquarii.....	2	0.83	23. 10. 18.82	3.128	2		87. 30. 53.53		10	0.78	53.53	19.61
626	ψ^3 Aquarii.....	1	0.61	23. 11. 21.84	3.128	1		99. 58. 45.39		2	0.83	45.39	19.56
627	67 Pegasi.....			23. 17. (40.)				100. 24. 29.71	59.26	1	0.61	29.71	19.62
628	κ Piscium.....	12	0.76	23. 19. 26.85	3.079	11	1	58. 24.		1	0.85	59.26	19.76
629	ι Piscium.....	8	0.79	23. 32. 26.52	+ 3.085	8		89. 32. 34.91		11	0.79	34.91	19.64
								85. 9. 52.71		8	0.76	52.71	— 19.47

CATALOGUE OF THE CONCLUDED MEAN R. A. AND MEAN N. P. D.—concluded.

No.	Star's Name.	Number of Obs. of R. A.	Fraction of Year for Mean of Obs.	Mean R. A. 1854, Jan. 1.	Annual Variation in R. A.	Number of Obs. of N. P. D.		Mean N. P. D. 1854, Jan. 1.		Whole Number of Obs. of N. P. D.	Fraction of Year for Mean of Obs.	Concluded Seconds of N. P. D.	Annual Variation in N. P. D.
						D.	R.	D.	R.				
630	γ Cephei..... γ Cephei S.P.....	2	0.60	h m s 23. 33. 23.75	s + 2.391	4 1	3	° ' " 13. 10. 56.93 58.02	56.92	8	0.77	" 57.06	" - 20.08
631	78 Pegasi.....	3	0.74	23. 36. (40.)		1	1	61. 26. 47.37	49.28	2	0.69	48.33	19.96
632	δ Sculptoris.....	1	0.93	23. 41. 18.71	3.140	4		118. 56. 12.00		4	0.76	12.00	19.89
633	*	1	0.83	23. 49. 24.88	3.066	2		85. 18. 55.29		2	0.87	55.29	20.03
634	27 Piscium.....	1	0.83	23. 51. 11.93	3.072	1		94. 21. 58.06		1	0.83	58.06	19.92
635	ω Piscium.....	7	0.77	23. 51. 48.94	3.080	5		83. 56. 42.03		5	0.77	42.03	19.96
636	29 Piscium.....	2	0.98	23. 54. 20.50	3.075	2		93. 50. 24.71		2	0.98	24.71	20.07
637	30 Piscium.....	3	0.65	23. 54. 28.25	3.082	3		96. 49. 30.56		3	0.66	30.56	20.03
638	2 Ceti.....	3	0.81	23. 56. 15.38	3.082	4		108. 8. 54.92		4	0.81	54.92	20.07
639	33 Piscium.....	6	0.81	23. 57. 51.70	+ 3.076	5		96. 31. 27.50		5	0.85	27.50	- 20.10

633. Of the 10th magnitude.

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1854	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
29	W. B. I. 206	0.10152	0.08673	1.44801	0.07835	84.282	9.87783	0.09139	0.77578	0.18048	115.233
43	* { R. A. 1 ^h . 38 ^m . (40 ^s)... N. P. D. 93°. 31'	0.10061	0.08915	1.45356	0.07783	83.780	9.86988	0.09890	0.83082	0.20880	111.518
45	W. B. I. 790	0.10037	0.08966	1.44772	0.07791	84.213	9.86976	0.09778	0.84400	0.21459	110.809
47	* { R. A. 1 ^h . 55 ^m . (10 ^s)... N. P. D. 79°. 13'	0.10019	0.09084	1.45015	0.08319	83.587	9.93641	0.01527	0.87069	0.22573	111.559
52	* { R. A. 2 ^h . 7 ^m . (10 ^s)... N. P. D. 76°. 53'	0.09974	0.09204	1.45079	0.08393	83.433	9.95274	0.00298	0.90064	0.23726	109.687
53	* { R. A. 2 ^h . 7 ^m . (20 ^s)... N. P. D. 74°. 57'	0.09989	0.09216	1.45118	0.08467	83.332	9.96275	9.99096	0.90107	0.23741	109.828
54	W. B. II. 109	0.09987	0.09223	1.45121	0.08469	83.323	9.96355	9.99051	0.90277	0.23802	109.712
56	* { R. A. 2 ^h . 13 ^m . (50 ^s)... N. P. D. 74°. 22'	0.09959	0.09279	1.45143	0.08478	83.281	9.96872	9.98906	0.91750	0.24336	108.653
63	31 Arietis	0.09841	0.09381	1.45085	0.08318	83.450	9.95351	0.01578	0.95464	0.25609	105.718
103	γ Camelopardali	0.12076	0.13475	1.49380	0.11856	72.635	0.25974	9.80617	1.11768	0.30220	82.665
132	Lalande 8798	0.08869	0.10248	1.45542	0.08255	83.204	0.04941	0.02867	1.24306	0.32786	81.094
136	{ R. A. 4 ^h . 40 ^m . (20 ^s)... N. P. D. 68°. 28'	0.08793	0.10291	1.45586	0.08241	83.201	0.05740	0.03140	1.25933	0.33045	79.286
137	{ R. A. 4 ^h . 40 ^m . (50 ^s)... N. P. D. 68°. 21'	0.08789	0.10295	1.45592	0.08241	83.196	0.05865	0.03177	1.26160	0.33080	79.023
139	{ R. A. 4 ^h . 43 ^m . (20 ^s)... N. P. D. 68°. 7'	0.08763	0.10307	1.45603	0.08235	83.201	0.06055	0.03254	1.26551	0.33137	78.582
143	W. B. IV. 1077	0.08649	0.10170	1.45025	0.07992	84.003	9.93671	0.06792	1.27647	0.33296	82.663
146	Lalande 9362	0.08670	0.10316	1.45566	0.08184	83.325	0.05385	0.03984	1.28124	0.33363	77.469
155	* { R. A. 5 ^h . 0 ^m . (10 ^s)... N. P. D. 81°. 28'	0.08545	0.10213	1.45124	0.08012	83.954	9.96109	0.06504	1.29688	0.33563	80.185
182	B. A. C. 1813	0.08577	0.13997	1.49738	0.08530	76.889	0.29350	0.04378	1.36123	0.34143	50.765
190	59 Orionis	0.08018	0.10266	1.44891	0.07921	84.527	9.90202	0.07872	1.38345	0.34224	76.088
195	* { R. A. 5 ^h . 58 ^m . (20 ^s)... N. P. D. 63°. 58'	0.07938	0.10523	1.45824	0.07926	83.659	0.09649	0.07804	1.39540	0.34238	64.040
230	Lalande 14177	0.07121	0.10334	1.45625	0.07617	84.726	0.06431	0.11895	1.49258	0.33300	57.009
239	B. A. C. 2548	0.01776	0.19312	1.54637	0.01872	76.632	0.30718	0.20321	1.51947	0.32539	26.799
252	* { R. A. 8 ^h . 5 ^m . (20 ^s)... N. P. D. 72°. 55'	0.06585	0.10022	1.45365	0.07531	85.578	0.01532	0.13122	1.54935	0.31262	56.417
253	* { R. A. 8 ^h . 5 ^m . (50 ^s)... N. P. D. 72°. 7'	0.06574	0.10029	1.45390	0.07510	85.575	0.02073	0.13362	1.54982	0.31241	55.884
256	B. A. C. 2803	0.04206	0.12917	1.48838	0.04493	84.128	0.25632	0.23456	1.55849	0.30754	27.814
258	* { R. A. 8 ^h . 22 ^m . (20 ^s)... N. P. D. 76°. 35'	0.06450	0.09890	1.45225	0.07582	85.839	9.98516	0.12549	1.56431	0.30389	58.130
260	* { R. A. 8 ^h . 26 ^m . (0 ^s)... N. P. D. 77°. 8'	0.06422	0.09863	1.45203	0.07590	85.889	9.98000	0.12449	1.56737	0.30188	58.413
263	* { R. A. 8 ^h . 31 ^m . (50 ^s)... N. P. D. 77°. 53'	0.06373	0.09819	1.45174	0.07598	85.971	9.97364	0.12352	1.57200	0.29860	58.736
268	* { R. A. 8 ^h . 36 ^m . (10 ^s)... N. P. D. 78°. 29'	0.06339	0.09790	1.45151	0.07608	86.025	9.96867	0.12251	1.57529	0.29616	59.020
273	* { R. A. 8 ^h . 51 ^m . (20 ^s)... N. P. D. 75°. 27'	0.06190	0.09708	1.45217	0.07490	86.212	9.98399	0.13691	1.58696	0.28630	56.947
277	* { R. A. 8 ^h . 58 ^m . (0 ^s)... N. P. D. 75°. 49'	0.06138	0.09658	1.45196	0.07489	86.301	9.97950	0.13728	1.59170	0.28176	57.160
284	W. B. IX. 234	0.06036	0.09548	1.45152	0.07492	86.479	9.96942	0.13712	1.60090	0.27177	57.805
288	* { R. A. 9 ^h . 17 ^m . (20 ^s)... N. P. D. 77°. 11'	0.05999	0.09502	1.45131	0.07500	86.547	9.96440	0.13617	1.60437	0.26755	58.215

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star- Catalogue for 1854	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
296	W. B. IX. 563	0.05939	0.09433	1.45116	0.07490	86.654	9.96085	0.13748	1.60944	0.26082	58.443
299	* { R. A. 9 ^h . 28 ^m . (10 ^s)... N. P. D. 77°. 35'..... }	0.05925	0.09411	1.45104	0.07498	86.684	9.95823	0.13658	1.61079	0.25889	58.702
303	* { R. A. 9 ^h . 34 ^m . (30 ^s)... N. P. D. 71°. 17'..... }	0.05818	0.09403	1.45239	0.07255	86.821	9.99083	0.16386	1.61434	0.25359	54.861
309	26 Leonis	0.05748	0.09245	1.45141	0.07333	87.002	9.96859	0.15581	1.62238	0.23984	57.227
317	Lalande 19990	0.05645	0.09048	1.45073	0.07354	87.248	9.95250	0.15379	1.63161	0.21990	59.107
321	Lalande 20181	0.05623	0.08982	1.45040	0.07394	87.308	9.94389	0.14918	1.63419	0.21317	60.255
322	Lalande 20261	0.05616	0.08957	1.45030	0.07404	87.332	9.94156	0.14814	1.63507	0.21075	60.578
324	Lalande 20333	0.05605	0.08936	1.45022	0.07411	87.355	9.93952	0.14721	1.63586	0.20845	60.877
325	Leonis	0.05574	0.08920	1.45048	0.07327	87.424	9.94695	0.15687	1.63676	0.20574	59.856
326	* { R. A. 10 ^h . 24 ^m . (50 ^s)... N. P. D. 75°. 38'..... }	0.05578	0.08912	1.45038	0.07349	87.419	9.94429	0.15444	1.63699	0.20505	60.228
328	Lalande 20499	0.05559	0.08878	1.45034	0.07337	87.467	9.94330	0.15586	1.63829	0.20104	60.374
331	B. A. C. 3662	0.05565	0.08814	1.44980	0.07458	87.468	9.92850	0.14169	1.63999	0.19520	62.582
334	Lalande 20748	0.05527	0.08772	1.44997	0.07371	87.568	9.93404	0.15204	1.64153	0.18962	61.789
337	Lalande 20876	0.05520	0.08719	1.44973	0.07416	87.598	9.92737	0.14677	1.64295	0.18402	62.867
338	B. A. C. 3761	0.05489	0.08636	1.44959	0.07404	87.696	9.92420	0.14832	1.64516	0.17407	63.493
343	Lalande 21299	0.05478	0.08553	1.44929	0.07463	87.745	9.91566	0.14123	1.64703	0.16443	65.062
344	Lalande 21367	0.05460	0.08523	1.44934	0.07420	87.803	9.91719	0.14632	1.64773	0.16044	64.829
345	Lalande 21371	0.05458	0.08522	1.44934	0.07415	87.809	9.91751	0.14703	1.64775	0.16021	64.774
352	B. A. C. 3854	0.05432	0.08445	1.44925	0.07380	87.910	9.91610	0.15121	1.64922	0.15051	65.119
355	B. A. C. 3864	0.01893	0.09051	1.45709	0.02487	92.243	0.07878	0.31998	1.64984	0.14606	39.221
358	B. A. C. 3892	0.05443	0.08356	1.44888	0.07520	87.899	9.90396	0.13420	1.65059	0.13985	67.735
361	B. A. C. 3911	0.05443	0.08319	1.44876	0.07564	87.904	9.90029	0.12856	1.65107	0.13526	68.645
364	W. B. XI. 486.....	0.05384	0.08260	1.44754	0.08505	87.426	9.87239	9.98334	1.65187	0.12660	80.012
367	W. B. XI. 534	0.05454	0.08225	1.44838	0.07804	87.826	9.88790	0.09588	1.65218	0.12308	72.450
368	ω Virginis	0.05426	0.08228	1.44867	0.07540	88.001	9.89829	0.13180	1.65218	0.12301	69.298
371	* { R. A. 11 ^h . 33 ^m . (20 ^s)... N. P. D. 87°. 39'..... }	0.05451	0.08197	1.44835	0.07820	87.840	9.88705	0.09368	1.65245	0.11928	72.900
373	* { R. A. 11 ^h . 37 ^m . (40 ^s)... N. P. D. 88°. 17'..... }	0.05447	0.08152	1.44831	0.07846	87.858	9.88593	0.08983	1.65283	0.11304	73.646
382	* { R. A. 11 ^h . 45 ^m . (40 ^s)... N. P. D. 104°. 56'..... }	0.05351	0.08074	1.44791	0.08556	87.512	9.88332	9.97441	1.65338	0.10124	81.736
385	W. B. XI. 804	0.05393	0.08059	1.44848	0.07453	88.216	9.89459	0.14245	1.65343	0.09948	70.220
387	* { R. A. 11 ^h . 51 ^m . (30 ^s)... N. P. D. 70°. 17'..... }	0.05278	0.08013	1.44853	0.07045	88.594	9.90515	0.18672	1.65361	0.09239	66.500
389	W. B. XI. 890	0.05344	0.08005	1.44806	0.08571	87.542	9.88756	9.97193	1.65365	0.09163	82.341
393	* { R. A. 12 ^h . 3 ^m . (50 ^s)... N. P. D. 91°. 7'..... }	0.05436	0.07878	1.44826	0.07965	87.977	9.88440	0.07207	1.65374	0.07308	77.683
395	* { R. A. 12 ^h . 5 ^m . (30 ^s)... N. P. D. 70°. 13'..... }	0.05276	0.07857	1.44807	0.07042	88.741	9.89398	0.18706	1.65369	0.07041	68.496
396	* { R. A. 12 ^h . 7 ^m . (30 ^s)... N. P. D. 91°. 41'..... }	0.05436	0.07838	1.44827	0.07989	87.986	9.88485	0.06842	1.65365	0.06717	78.320
398	Lalande 22999	0.05436	0.07820	1.44828	0.08000	87.990	9.88508	0.06681	1.65361	0.06418	78.624

NEW CONSTANTS FOR STARS IN THE CATALOGUE NOT PREVIOUSLY OBSERVED.

No. in Star-Catalogue for 1854.	Star's Name.	Logarithms of				Value of l	Logarithms of				Value of l'
		e	f	g	h		e'	f'	g'	h'	
404	* { R. A. 12 ^h . 29 ^m . (0 ^s)... N. P. D. 72°. 4'..... }	0.05326	0.07596	1.44741	0.07137	88.876	9.87396	0.17766	1.65218	0.03092	72.944
409	* { R. A. 12 ^h . 50 ^m . (20 ^s)... N. P. D. 98°. 51'..... }	0.05467	0.07383	1.44895	0.08284	88.020	9.90553	0.02125	1.64909	9.99217	85.591
410	W. B. XII. 880.....	0.05468	0.07371	1.44898	0.08291	88.022	9.90655	0.01980	1.64887	9.98997	85.782
411	* { R. A. 12 ^h . 57 ^m . (50 ^s)... N. P. D. 99°. 20'..... }	0.05484	0.07303	1.44910	0.08300	88.042	9.90961	0.01827	1.64756	9.97787	86.564
413	* { R. A. 13 ^h . 3 ^m . (40 ^s)... N. P. D. 99°. 44'..... }	0.05497	0.07242	1.44922	0.08314	88.056	9.91302	0.01595	1.64625	9.96651	87.316
431	B. A. C. 4713.....	0.05800	0.06650	1.44767	0.07806	88.728	9.86833	0.09572	1.62490	9.83403	92.721
433	3 Ursæ Minoris.....	9.98937	0.02649	1.40501	9.99261	103.963	9.76734	0.30649	1.62436	9.83136	77.250
436	ν ² Virginis.....	0.05860	0.06563	1.44852	0.07964	88.574	9.89131	0.07229	1.62025	9.81101	94.775
437	* { R. A. 14 ^h . 16 ^m . (50 ^s)... N. P. D. 81°. 18'..... }	0.05852	0.06524	1.44647	0.07612	89.005	9.83613	0.12233	1.61893	9.80468	93.877
439	φ Virginis.....	0.05898	0.06507	1.44858	0.07971	88.575	9.89309	0.07109	1.61702	9.79566	95.708
454	ν ² Libræ.....	0.06094	0.06119	1.45237	0.08405	88.107	9.98900	0.00215	1.59413	9.69700	100.925
461	W. B. XV. 210.....	0.06227	0.06032	1.45191	0.08301	88.186	9.97804	0.01904	1.58429	9.65892	102.638
493	B. A. C. 5748.....	0.07238	0.05489	1.45206	0.08045	88.029	9.98009	0.05003	1.48440	9.37729	115.500
496	* { R. A. 17 ^h . 7 ^m . (10 ^s)... N. P. D. 106°. 42'..... }	0.07339	0.05394	1.45425	0.08083	87.824	0.02694	0.05474	1.47104	9.35479	113.884
500	* { R. A. 17 ^h . 8 ^m . (30 ^s)... N. P. D. 106°. 23'..... }	0.07355	0.05395	1.45414	0.08076	87.827	0.02469	0.05583	1.46936	9.35263	114.114
512	B. A. C. 6049.....	0.07754	0.05395	1.45219	0.07949	87.792	9.98310	0.07462	1.42055	9.30600	119.606
521	70 Ophiuchi.....	0.07916	0.05434	1.44736	0.07918	88.055	9.85935	0.07920	1.39823	9.30103	126.895
536	* { R. A. 18 ^h . 53 ^m . (0 ^s)... N. P. D. 76°. 56'..... }	0.08482	0.05437	1.44356	0.08046	87.863	9.74578	0.09757	1.30971	9.35531	134.629
538	W. B. XVIII. 1364.....	0.08482	0.05473	1.44499	0.08009	87.756	9.78986	0.06558	1.30849	9.35659	135.417
547	* { R. A. 19 ^h . 44 ^m . (10 ^s)... N. P. D. 109°. 45'..... }	0.09029	0.05551	1.45487	0.07536	86.876	0.03933	0.12978	1.20940	9.47934	121.950
548	* { R. A. 19 ^h . 44 ^m . (40 ^s)... N. P. D. 109°. 38'..... }	0.09033	0.05556	1.45482	0.07537	86.872	0.03810	0.12963	1.20834	9.48071	122.063
561	* { R. A. 20 ^h . 28 ^m . (10 ^s)... N. P. D. 108°. 2'..... }	0.09421	0.05846	1.45359	0.07441	86.569	0.01460	0.14197	1.11086	9.60450	123.933
562	* { R. A. 20 ^h . 28 ^m . (20 ^s)... N. P. D. 108°. 5'..... }	0.09422	0.05845	1.45361	0.07440	86.568	0.01490	0.14213	1.11086	9.60450	123.903
563	* { R. A. 20 ^h . 29 ^m . (0 ^s)... N. P. D. 108°. 10'..... }	0.09428	0.05849	1.45362	0.07436	86.562	0.01528	0.14261	1.10926	9.60641	123.855
564	* { R. A. 20 ^h . 29 ^m . (0 ^s)... N. P. D. 107°. 59'..... }	0.09428	0.05852	1.45356	0.07440	86.562	0.01397	0.14210	1.10888	9.60680	123.976
572	* { R. A. 20 ^h . 50 ^m . (0 ^s)... N. P. D. 107°. 15'..... }	0.09592	0.06014	1.45296	0.07409	86.406	0.00204	0.14603	1.06049	9.66345	124.578
577	* { R. A. 21 ^h . 4 ^m . (0 ^s)... N. P. D. 106°. 38'..... }	0.09691	0.06134	1.45252	0.07396	86.300	9.99238	0.14805	1.02341	9.70449	124.955
579	* { R. A. 21 ^h . 8 ^m . (20 ^s)... N. P. D. 106°. 28'..... }	0.09724	0.06171	1.45240	0.07393	86.261	9.98976	0.14848	1.01340	9.71523	125.038
581	Lalande 41317.....	0.09734	0.06183	1.45238	0.07388	86.252	9.98932	0.14898	1.00962	9.71923	125.010
619	* { R. A. 22 ^h . 54 ^m . (30 ^s)... N. P. D. 102°. 39'..... }	0.10228	0.07216	1.44956	0.07395	85.415	9.92330	0.14927	0.76043	9.96292	123.929
621	* { R. A. 23 ^h . 0 ^m . (20 ^s)... N. P. D. 102°. 8'..... }	0.10240	0.07279	1.44940	0.07415	85.362	9.91892	0.14709	0.74981	9.97433	123.869
622	* { R. A. 23 ^h . 2 ^m . (0 ^s)... N. P. D. 101°. 58'..... }	0.10244	0.07296	1.44936	0.07417	85.350	9.91761	0.14635	0.74694	9.97755	123.860
631	78 Pegasi.....	0.10567	0.07635	1.44710	0.09204	83.811	9.88630	9.86026	0.70347	0.04039	139.137

ROYAL OBSERVATORY, GREENWICH.

HORIZONTAL AND VERTICAL DIAMETERS

AND

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF THE

SUN, MOON, AND PLANETS,

(The Right Ascensions of the Sun, Moon, and Planets corrected for Personal Equation ; and the North Polar Distances corrected for Discordance of Direct and Reflexion Results, for Flexure of the Telescope of the Transit-Circle, and for Error of Assumed Colatitude,)

DEDUCED FROM THE OBSERVATIONS,

AND

COMPARED WITH THE NAUTICAL ALMANAC:

WITH

THE INFERRED POSITION OF THE ECLIPTIC; THE GEOCENTRIC ERRORS OF THE SUN, MOON, AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE;

AND

THE EQUATIONS BETWEEN THE GEOCENTRIC ERRORS OF THE PLANETS
AND THE HELIOCENTRIC ERRORS OF THE EARTH AND PLANETS,
IN LONGITUDE AND ECLIPTIC POLAR DISTANCE.

1854.

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN, corrected
for Refraction and Parallax : compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1854.	m s	s	s	' "	"	"	1854.	m s	s	s	' "	"	"
Jan. 13				32. 35.79	35.80	+ 0.01	June 28	2. 17.53	17.74	+ 0.21	31. 30.55	32.00	+ 1.45
14	2. 20.36	20.23	- 0.13	32. 33.88	35.60	+ 1.72	29	2. 17.51	17.68	+ 0.17	31. 29.22	32.00	+ 2.78
20	2. 19.11	19.20	+ 0.09	32. 31.96	34.60	+ 2.64	July 11	2. 16.59	16.58	- 0.01			
21	2. 19.02	18.98	- 0.04	32. 33.80	34.40	+ 0.60	18	2. 15.60	15.62	+ 0.02	31. 31.00	33.00	+ 2.00
25	2. 17.92	18.10	+ 0.18	32. 34.43	33.40	- 1.03	19	2. 15.21	15.46	+ 0.25	31. 29.85	33.20	+ 3.35
26	2. 17.84	17.88	+ 0.04	32. 30.26	33.20	+ 2.94	20	2. 15.12	15.32	+ 0.20			
Feb. 2	2. 16.28	16.28	0.00	32. 29.28	31.40	+ 2.12	21	2. 14.94	15.16	+ 0.22	31. 33.37	33.40	+ 0.03
3	2. 16.21	16.06	- 0.15	32. 30.55	31.00	+ 0.45	22	2. 15.02	15.00	- 0.02	31. 34.05	33.60	- 0.45
4	2. 15.82	15.82	0.00	32. 31.31	30.60	- 0.71	25	2. 14.60	14.50	- 0.10	31. 33.46	34.20	+ 0.74
10	2. 14.59	14.46	- 0.13	32. 29.36	28.60	- 0.76	28				31. 39.41	34.80	- 4.61
14	2. 13.53	13.58	+ 0.05	32. 24.79	27.00	+ 2.21	29				31. 30.03	35.00	+ 4.97
16	2. 13.37	13.16	- 0.21	32. 25.77	26.20	+ 0.43	Aug. 2				31. 33.83	36.00	+ 2.17
21	2. 12.16	12.18	+ 0.02	32. 23.88	24.00	+ 0.12	11	2. 11.26	11.60	+ 0.34			
22	2. 11.97	12.00	+ 0.03	32. 21.50	23.60	+ 2.10	16	2. 10.78	10.80	+ 0.02	31. 41.07	40.60	- 0.47
25	2. 11.29	11.46	+ 0.17	32. 17.01	22.00	+ 4.99	19	2. 10.17	10.36	+ 0.19	31. 39.74	41.60	+ 1.86
27	2. 11.04	11.14	+ 0.10	32. 21.11	21.20	+ 0.09	25	2. 9.55	9.56	+ 0.01	31. 41.45	44.00	+ 2.55
Mar. 1	2. 10.70	10.82	+ 0.12	32. 18.22	20.20	+ 1.98	28	2. 9.21	9.22	+ 0.01	31. 45.09	45.40	+ 0.31
2	2. 10.62	10.68	+ 0.06				29				31. 42.81	45.80	+ 2.99
3	2. 10.60	10.54	- 0.06	32. 28.37	19.20	(- 9.17)	30	2. 8.94	9.02	+ 0.08	31. 47.63	46.20	- 1.43
6	2. 10.07	10.14	+ 0.07	32. 17.36	17.80	+ 0.44	Sept. 1	2. 8.78	8.82	+ 0.04	31. 46.34	47.20	+ 0.86
11				32. 13.48	15.20	+ 1.72	2	2. 8.65	8.74	+ 0.09	31. 46.04	47.60	+ 1.56
13	2. 9.26	9.44	+ 0.18	32. 13.23	14.00	+ 0.77	4	2. 8.48	8.58	+ 0.10	31. 47.65	48.60	+ 0.95
15	2. 9.24	9.28	+ 0.04	32. 12.09	13.00	+ 0.91	6				31. 50.61	49.60	- 1.01
17	2. 9.08	9.16	+ 0.08	32. 11.00	12.00	+ 1.00	7	2. 8.34	8.38	+ 0.04	31. 52.47	50.20	- 2.27
27	2. 8.75	8.88	+ 0.13	32. 5.51	6.40	+ 0.89	8				31. 51.13	50.60	- 0.53
29	2. 8.82	8.90	+ 0.08	32. 4.50	5.20	+ 0.70	9				31. 52.13	51.20	- 0.93
31	2. 8.94	8.94	0.00	32. 2.40	4.00	+ 1.60	11	2. 8.10	8.20	+ 0.10	31. 52.44	52.00	- 0.44
April 1	2. 9.03	8.96	- 0.07	32. 1.84	3.60	+ 1.76	15	2. 7.98	8.10	+ 0.12	31. 51.09	54.00	+ 2.91
4	2. 9.08	9.08	0.00	32. 0.57	2.00	+ 1.43	22	2. 8.13	8.18	+ 0.05			
5				32. 1.76	1.40	- 0.36	26				31. 59.31	60.00	+ 0.69
6	2. 9.09	9.20	+ 0.11	32. 2.56	0.80	- 1.76	27	2. 8.27	8.40	+ 0.13	31. 59.09	60.40	+ 1.31
8	2. 9.16	9.34	+ 0.18	31. 59.62	59.80	+ 0.18	28	2. 8.34	8.48	+ 0.14	32. 3.78	1.00	- 2.78
11	2. 9.48	9.56	+ 0.08	31. 60.89	58.20	- 2.69	30	2. 8.64	8.62	- 0.02	31. 59.68	62.20	+ 2.52
12				31. 57.58	57.60	+ 0.02	Oct. 2	2. 8.74	8.80	+ 0.06	32. 1.96	3.40	+ 1.44
13	2. 9.72	9.74	+ 0.02	31. 55.26	57.00	+ 1.74	3	2. 8.64	8.90	+ 0.26	31. 54.23	63.80	(+ 9.57)
15	2. 9.90	9.94	+ 0.04	31. 54.20	56.00	+ 1.80	4				32. 1.17	4.40	+ 3.23
18	2. 10.34	10.26	- 0.08	31. 53.75	54.40	+ 0.65	5	2. 8.90	9.10	+ 0.20	32. 0.51	5.00	+ 4.49
19	2. 10.48	10.38	- 0.10	31. 53.08	53.80	+ 0.72	10	2. 9.57	9.72	+ 0.15	32. 6.11	7.80	+ 1.69
20	2. 10.48	10.50	+ 0.02	31. 54.81	53.40	- 1.41	11	2. 9.52	9.86	+ 0.34			
21	2. 10.68	10.64	- 0.04	31. 49.57	52.80	+ 3.23	12	2. 9.82	10.00	+ 0.18	32. 9.25	8.80	- 0.45
May 2	2. 12.01	12.22	+ 0.21				13	2. 10.04	10.16	+ 0.12			
4				31. 43.52	46.60	+ 3.08	16				32. 4.79	11.00	+ 6.21
8	2. 13.07	13.20	+ 0.13				23	2. 11.78	11.94	+ 0.16	32. 11.31	14.80	+ 3.49
12	2. 13.85	13.86	+ 0.01	31. 42.69	43.00	+ 0.31	24	2. 12.03	12.14	+ 0.11	32. 12.44	15.40	+ 2.96
15	2. 14.36	14.36	0.00	31. 47.56	41.80	- 5.76	26	2. 12.40	12.56	+ 0.16	32. 14.00	16.40	+ 2.40
17	2. 14.53	14.68	+ 0.15				27	2. 12.58	12.76	+ 0.18			
19	2. 14.95	14.98	+ 0.03	31. 35.39	40.40	+ 5.01	28	2. 12.78	12.98	+ 0.20	32. 14.92	17.40	+ 2.48
20	2. 15.02	15.14	+ 0.12	31. 40.59	40.00	- 0.59	30	2. 13.30	13.42	+ 0.12	32. 18.34	18.40	+ 0.06
23	2. 15.46	15.60	+ 0.14	31. 40.21	38.80	- 1.41	31	2. 13.56	13.64	+ 0.08	32. 16.61	19.00	+ 2.39
24				31. 35.69	38.40	+ 2.71	Nov. 1	2. 13.78	13.88	+ 0.10	32. 20.37	19.40	- 0.97
26	2. 15.72	16.02	+ 0.30	31. 39.48	38.00	- 1.48	3	2. 14.23	14.34	+ 0.11	32. 14.10	20.40	+ 6.30
31	2. 16.96	16.66	- 0.30				6	2. 14.95	15.04	+ 0.09	32. 21.09	22.00	+ 0.91
June 1	2. 16.72	16.78	+ 0.06	31. 34.81	36.20	+ 1.39	10	2. 15.80	16.00	+ 0.20	32. 20.65	23.80	+ 3.15
5	2. 17.12	17.20	+ 0.08	31. 28.08	35.20	(+ 7.12)	23	2. 18.85	19.00	+ 0.15	32. 29.52	29.00	- 0.52
10	2. 17.25	17.60	+ 0.35	31. 30.24	34.20	+ 3.96	29	2. 19.99	20.22	+ 0.23	32. 26.96	31.00	+ 4.04
14	2. 17.60	17.82	+ 0.22	31. 32.48	33.40	+ 0.92	30	2. 20.46	20.40	- 0.06	32. 30.64	31.40	+ 0.76

SIDEREAL TIMES occupied by the TRANSIT of the SUN'S DIAMETER; and VERTICAL DIAMETERS of the SUN, &c.—concluded.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1854.	m s	s	s	' "	"	"	1854.	m s	s	s	' "	"	"
Dec. 1	2. 20'40	20'58	+ 0'18	32. 28'92	31'80	+ 2'88	Dec. 12	2. 22'04	22'08	+ 0'04	32. 32'96	34'40	+ 1'44
2	2. 20'52	20'76	+ 0'24	32. 29'50	32'20	+ 2'70	15	2. 22'34	22'32	— 0'02	32. 30'58	35'00	+ 4'42
4	2. 20'88	21'08	+ 0'20	32. 27'04	32'60	+ 5'56	16	2. 22'20	22'38	+ 0'18	32. 33'18	35'20	+ 2'02
6	2. 21'10	21'38	+ 0'28	32. 33'11	33'20	+ 0'09	19	2. 22'23	22'52	+ 0'29	32. 31'97	35'60	+ 3'63
7	2. 21'38	21'52	+ 0'14	32. 34'80	33'40	— 1'40	26	2. 22'41	22'52	+ 0'11	32. 35'68	36'20	+ 0'52
9	2. 21'46	21'76	+ 0'30	32. 28'94	33'80	+ 4'86	27	2. 22'21	22'48	+ 0'27	32. 33'48	36'40	+ 2'92
11	2. 21'90	21'98	+ 0'08	32. 32'42	34'20	+ 1'78	28				32. 31'46	36'40	+ 4'94

SIDEREAL TIMES occupied by the TRANSIT of the MOON'S DIAMETER; and VERTICAL DIAMETERS of the MOON :
compared with those of the Nautical Almanac.

Feb. 7				29. 31'81	33'78	+ 1'97	June 12				33. 20'50	17'44	— 3'06
12	2. 12'38	12'40	+ 0'02	30. 18'40	18'24	— 0'16							
13				30. 33'28	33'96	+ 0'68	Sept. 1				32. 36'01	32'30	— 3'71
April 4				29. 34'50	37'30	+ 2'80	6	2. 17'52	17'54	+ 0'02	32. 35'50	38'48	+ 2'98
13				32. 20'36	19'02	— 1'34	Oct. 12				29. 45'23	40'98	— 4'25
17				32. 37'48	33'78	— 3'70	Dec. 3				30. 13'55	14'36	+ 0'81
May 12				32. 60'30	57'70	— 2'60	5				29. 46'64	48'46	+ 1'82
June 10	2. 33'85	34'16	+ 0'31	33. 18'52	23'86	+ 5'34	6				29. 39'54	39'26	— 0'28
							31				29. 56'11	57'62	+ 1'51

VERTICAL DIAMETERS of VENUS, compared with those of the Nautical Almanac.

DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1854.	"	"	"	1854.	"	"	"
January 13	36'49	33'80	— 2'69	August 21	12'79	11'60	— 1'19
14	35'38	34'40	— 0'98	24	13'52	11'60	— 1'92
21	39'47	38'00	— 1'47	25	13'66	11'40	— 2'26
23	39'48	39'40	— 0'08	28	12'37	11'40	— 0'97
25	41'64	40'80	— 0'84	29	13'61	11'40	— 2'21
26	46'03	41'40	— 4'63	September 1	10'21	11'20	+ 0'99
February 3	49'23	47'00	— 2'23	5	12'23	11'00	— 1'23
4	49'72	47'80	— 1'92	6	12'52	11'00	— 1'52
April 3	38'85	38'80	— 0'05	19	13'16	10'60	— 2'56
4	40'98	38'00	— 2'98	21	11'60	10'60	— 1'00
19	30'13	30'40	+ 0'27	25	11'72	10'40	— 1'32
20	29'20	30'00	+ 0'80	26	10'84	10'40	— 0'44
May 14	20'21	22'40	+ 2'19	27	12'32	10'40	— 1'92
25	17'94	20'00	+ 2'06	October 11	9'58	10'20	+ 0'62
31	19'43	18'80	— 0'63	12	11'47	10'20	— 1'27
June 29	15'82	15'00	— 0'82	25	10'23	10'00	— 0'23
July 17	14'20	13'40	— 0'80	26	11'84	10'00	— 1'84
21	14'59	13'20	— 1'39	27	10'62	10'00	— 0'62
25	15'44	13'00	— 2'44	29	10'44	9'80	— 0'64
28	12'11	12'80	+ 0'69	November 9	8'90	9'80	+ 0'90
				30	11'86	9'60	— 2'26

SIDEREAL TIMES occupied by the 'TRANSIT of the DIAMETER of MARS ; and VERTICAL DIAMETERS of MARS :
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1854.	s	s	s	"	"	"	1854.	s	s	s	"	"	"
Jan. 24	1'01	0'74	-0'27	14'82	11'00	-3'82	Mar. 27				15'39	11'80	-3'59
Feb. 2	1'24	0'82	-0'42	14'64	12'00	-2'64	28	0'87	0'80	-0'07	15'07	11'60	-3'47
3	1'13	0'82	-0'31	14'84	12'00	-2'84	29				16'55	11'60	-4'95
9	1'25	0'86	-0'39	16'13	12'40	-3'73	30				14'55	11'40	-3'15
13	1'09	0'86	-0'23	18'08	12'60	-5'48	31						
23	1'10	0'90	-0'20	14'57	13'20	-1'37	April 1				14'81	11'40	-3'41
25	1'30	0'90	-0'40	17'52	13'20	-4'32	4				14'85	11'20	-3'65
27	1'31	0'90	-0'41	15'85	13'20	-2'65	5				14'37	11'00	-3'37
28	1'28	0'90	-0'38	15'70	13'20	-2'50	6				15'55	11'00	-4'55
Mar. 1	1'20	0'90	-0'30	15'96	13'20	-2'76	7				13'86	10'80	-3'06
3	1'05	0'90	-0'15	16'82	13'20	-3'62	8				12'62	10'80	-1'82
10	1'07	0'88	-0'19				10				14'18	10'60	-3'58
11	1'12	0'88	-0'24	16'88	13'00	-3'88	11				14'62	10'60	-4'02
13	1'05	0'88	-0'17	16'45	12'80	-3'65	13				12'78	10'40	-2'38
16	1'00	0'86	-0'14	14'42	12'60	-1'82	17				11'46	10'00	-1'46
17	0'96	0'86	-0'10	16'63	12'60	-4'03	18				8'87	10'00	+1'13
18	1'39	0'86	-0'53	17'37	12'60	-4'77	19				12'44	9'80	-2'64
21				14'48	12'40	-2'08	21				10'45	9'80	-0'65
23	0'87	0'84	-0'03	15'03	12'20	-2'83	24				15'28	9'60	-5'68
24	1'24	0'84	-0'40	14'46	12'00	-2'46	May 2				10'02	9'00	-1'02

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of JUPITER ; and VERTICAL DIAMETERS of JUPITER :
compared with those of the Nautical Almanac.

May 19	2'99	3'10	+0'11	41'49	40'40	-1'09	Sept. 4	3'35	3'24	-0'11	45'54	41'40	-4'14
24	3'27	3'16	-0'11	45'05	41'20	-3'85	5	3'35	3'22	-0'13	42'78	41'20	-1'58
June 17	3'38	3'36	-0'02	48'43	43'60	-4'83	6	2'92	3'22	+0'30	42'11	41'20	-0'91
19				47'37	43'80	-3'57	7	3'25	3'20	-0'05	42'87	41'00	-1'87
July 6	3'41	3'46	+0'05	46'18	44'60	-1'58	8	3'23	3'20	-0'03	42'48	41'00	-1'48
15	3'40	3'48	+0'08	42'04	44'80	+2'76	9	3'68	3'20	-0'48	43'64	40'80	-2'84
19	3'24	3'48	+0'24	40'54	44'80	+4'26	11	3'10	3'18	+0'08	43'97	40'60	-3'37
20	3'51	3'46	-0'05	46'84	44'60	-2'24	12	3'26	3'16	-0'10	41'63	40'40	-1'23
21	3'61	3'46	-0'15	48'67	44'60	-4'07	18	2'72	3'12	+0'40	38'44	39'60	+1'16
22	3'46	3'46	0'00	46'22	44'60	-1'62	20	2'92	3'08	+0'16	38'67	39'60	+0'93
24	3'44	3'46	+0'02	46'82	44'60	-2'22	21	2'94	3'08	+0'14	41'89	39'40	-2'49
25	3'51	3'46	+0'16	47'29	44'60	-2'69	22	2'90	3'08	+0'18	39'72	39'40	-0'32
28	3'30	3'46		47'27	44'60	-2'67	25	2'86	3'04	+0'18	43'31	39'00	-4'31
Aug. 1	3'71	3'44	-0'27				26	2'89	3'02	+0'13	38'71	38'80	+0'09
8	3'41	3'42	+0'01	46'47	44'40	-2'07	27	2'99	3'02	+0'03	38'29	38'60	+0'31
9	3'16	3'42	+0'26	45'92	44'20	-1'72	28	2'90	3'02	+0'12	41'93	38'60	-3'33
12	3'28	3'42	-0'14	46'68	44'00	-2'68	29	2'80	3'00	+0'20			
14	3'34	3'42	+0'08	47'13	43'80	-3'33	30	2'78	2'98	+0'20	38'73	38'20	-0'53
17	3'48	3'38	+0'10	45'60	43'60	-2'00	Oct. 2	2'97	2'96	-0'01	38'93	38'00	-0'93
22	3'39	3'36	-0'03	43'48	43'20	-0'28	4	2'99	2'96	-0'03	39'57	37'80	-1'77
24	3'23	3'34	+0'11	40'79	42'80	+2'01	11	2'89	2'88	-0'01	39'53	37'00	-2'53
25	3'10	3'32	+0'22	46'60	42'60	-4'00	12	2'59	2'88	+0'29	37'51	37'00	-0'51
30	3'11	3'28	+0'17				28	2'54	2'74	+0'20	33'73	35'20	+1'47
31	3'29	3'28	-0'01	42'28	42'00	-0'28	30	2'81	2'72	-0'09	34'69	35'00	+0'31
Sept. 1	3'47	3'26	-0'21	41'36	42'00	+0'64	Nov. 1	2'68	2'72	+0'04	36'82	34'80	-2'02
2	3'16	3'24	+0'08	47'44	41'80	-5'64	3	2'48	2'68	+0'20	35'53	34'40	-1'13
				42'65	41'60	-1'05	9	2'25	2'62	+0'37	32'59	34'00	+1'41
							11	2'41	2'62	+0'21	33'02	33'80	+0'78

SIDEREAL TIMES occupied by the TRANSIT of the DIAMETER of SATURN; and VERTICAL DIAMETERS of SATURN:
compared with those of the Nautical Almanac.

DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	DAY.	Observed Duration of Transit.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.	Observed Vertical Diameter.	Seconds of Nautical Almanac.	Apparent Error of Nautical Almanac.
1854.	s	s	s	"	"	"	1854.	s	s	s	"	"	"
Jan. 2	1'46	1'36	-0'10				Oct. 30	1'56	1'40	-0'16			
21	1'54	1'32	-0'22				31	1'51	1'40	-0'11	20'38	18'40	-1'98
23	1'68	1'32	-0'36	18'64	17'40	-1'24	Nov. 6	1'46	1'40	-0'06			
26	1'43	1'30	-0'13				8	1'54	1'42	-0'12			
28	1'34	1'30	-0'04				9	1'48	1'42	-0'06			
30	1'67	1'28	-0'39	18'65	17'00	-1'65	14	1'54	1'42	-0'12			
Feb. 3	1'55	1'28	-0'27	19'52	17'00	-2'52	16	1'28	1'42	+0'14			
13	1'41	1'26	-0'15	19'05	16'60	-2'45	22	1'68	1'44	-0'24			
18	1'33	1'24	-0'09	18'90	16'60	-2'30	23	1'20	1'44	+0'24			
Sept. 17	1'30	1'32	+0'02				24	1'50	1'44	-0'06	21'52	18'80	-2'72
20	1'42	1'32	-0'10				27	1'45	1'44	-0'01			
21	1'35	1'32	-0'03				Dec. 2	1'36	1'44	+0'08			
24	1'48	1'32	-0'16				5	1'51	1'44	-0'07			
27	1'35	1'34	-0'01				7	1'47	1'42	-0'05			
Oct. 2	1'31	1'34	+0'03				9	1'41	1'42	+0'01			
11	1'37	1'38	+0'01				12	1'54	1'42	-0'12			
12	1'52	1'38	-0'14				16	1'57	1'40	-0'17			
20	1'52	1'38	-0'14				18	1'49	1'40	-0'09			
25	1'44	1'40	-0'04				20	1'59	1'40	-0'19			
26	1'44	1'40	-0'04				27	1'50	1'40	-0'10			
28	1'39	1'40	+0'01				28	1'45	1'40	-0'05			
							30	1'58	1'38	-0'20			

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.	
1854. Jan.	d h m s	h m s	s	s	o ' "	"	"
13.	0. 9. 0'5	19. 39. 35'07	34'90	— 0'17	111. 29. 12'74	11'80	— 0'94
14.	0. 9. 22'6	19. 43. 53'71	53'57	— 0'14	111. 18. 44'86	44'90	+ 0'04
20.	0. 11. 20'4	20. 9. 31'18	31'18	0'00	110. 7. 37'47	38'70	+ 1'23
21.	0. 11. 37'7	20. 13. 45'12	44'94	— 0'18	109. 54. 25'35	26'50	+ 1'15
25.	0. 12. 38'7	20. 30. 32'48	32'37	— 0'11	108. 57. 60'27	58'60	— 1'67
26.	0. 12. 52'0	20. 34. 42'36	42'27	— 0'09	108. 42. 59'06	58'50	— 0'56
Feb.							
2.	0. 14. 2'4	21. 3. 28'85	28'64	— 0'21	106. 48. 49'07	48'60	— 0'47
3.	0. 14. 9'1	21. 7. 32'13	31'93	— 0'20	106. 31. 16'73	16'50	— 0'23
4.	0. 14. 14'8	21. 11. 34'48	34'37	— 0'11	106. 13. 27'99	27'30	— 0'69
10.	0. 14. 32'8	21. 35. 31'86	31'57	— 0'29	104. 20. 56'29	55'90	— 0'39
14.	0. 14. 28'7	21. 51. 13'97	13'82	— 0'15	103. 1. 4'32	5'40	+ 1'08
16.	0. 14. 22'6	21. 59. 0'89	0'48	— 0'41	102. 19. 53'24	52'90	— 0'34
18.	0. 14. 12'9	22. 6. 44'35	44'32	— 0'03	101. 37. 50'29	53'20	+ 2'91
21.	0. 13. 54'1	22. 18. 15'10	15'07	— 0'03	100. 33. 30'44	31'90	+ 1'46
22.	0. 13. 46'6	22. 22. 4'14	4'05	— 0'09	100. 11. 43'40	44'60	+ 1'20
25.	0. 13. 20'2	22. 33. 27'32	27'33	+ 0'01	99. 5. 26'32	27'80	+ 1'48
27.	0. 13. 0'0	22. 40. 60'22	59'94	— 0'28	98. 20. 34'36	35'10	+ 0'74
March							
1.	0. 12. 37'4	22. 48. 30'60	30'35	— 0'25	97. 35. 11'85	13'10	+ 1'25
2.	0. 12. 25'2	22. 52. 14'99	14'77	— 0'22	97. 12. 20'54	22'20	+ 1'66
3.	0. 12. 12'3	22. 55. 58'55	58'69	+ 0'14	96. 49. 27'90	25'20	— 2'70
6.	0. 11. 32'0	23. 7. 7'79	7'57	— 0'22	95. 40. 0'46	1'90	+ 1'44
11.	0. 10. 15'9	23. 25. 34'32	33'97	— 0'35	93. 42. 55'83	59'30	+ 3'47
13.	0. 9. 43'1	23. 32. 54'49	54'08	— 0'41	92. 55. 47'68	49'80	+ 2'12
15.	0. 9. 8'9	23. 40. 13'34	13'08	— 0'26	92. 8. 29'97	32'80	+ 2'83
17.	0. 8. 34'0	23. 47. 31'44	31'16	— 0'28	91. 21. 9'95	11'20	+ 1'25
27.	0. 5. 31'6	0. 23. 54'17	54'03	— 0'14	87. 24. 46'86	49'00	+ 2'14

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER—*continued.*

Mean Solar Time of Observation.					R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854.	d	h	m	s	h	m	s	°	'	"
March	29.	0.	4.	54.1	0. 31. 10.54	10.19	— 0.35	86. 37. 56.78	57.90	+ 1.12
	31.	0.	4.	18.3	0. 38. 26.82	26.53	— 0.29	85. 51. 21.63	22.10	+ 0.47
April	1.	0.	4.	0.0	0. 42. 5.00	4.82	— 0.18	85. 28. 8.87	10.90	+ 2.03
	3.	0.	3.	23.8	0. 49. 21.74	21.69	— 0.05	....	...	...
	4.	0.	3.	5.7	0. 53. 0.19	0.31	+ 0.12	84. 19. 7.96	8.60	+ 0.64
	5.	0.	2.	48.3	0. 56. 39.34	39.07	— 0.27	83. 56. 21.45	19.40	— 2.05
	6.	0.	2.	30.7	1. 0. 18.22	18.00	— 0.22	83. 33. 35.65	36.70	+ 1.05
	7.	0.	2.	13.5	1. 3. 57.48	57.12	— 0.36	83. 10. 58.96	60.60	+ 1.64
	8.	0.	1.	56.2	1. 7. 36.72	36.44	— 0.28	82. 48. 28.20	31.70	+ 3.50
	11.	0.	1.	5.7	1. 18. 35.71	35.82	+ 0.11	81. 41. 48.93	50.50	+ 1.57
	12.	0.	0.	49.7	1. 22. 16.29	16.15	— 0.14	81. 19. 63.99	53.10	(— 10.89)
	13.	0.	0.	34.1	1. 25. 57.19	56.79	— 0.40	80. 58. 1.40	4.30	+ 2.90
	15.	0.	0.	3.4	1. 33. 19.48	19.06	— 0.42	80. 14. 51.44	54.00	+ 2.56
	17.	23.	59.	19.9	1. 44. 25.54	25.24	— 0.30	79. 11. 19.33	21.20	+ 1.87
	18.	23.	59.	6.2	1. 48. 8.31	8.10	— 0.21	78. 50. 26.74	30.80	+ 4.06
	19.	23.	58.	53.4	1. 51. 51.94	51.39	— 0.55	78. 29. 49.88	51.40	+ 1.52
	20.	23.	58.	40.5	1. 55. 35.71	35.12	— 0.59	78. 9. 21.15	23.10	+ 1.95
May	1.	23.	56.	50.6	2. 37. 8.67	8.20	— 0.47	....	...	...
	3.	23.	56.	38.5	2. 44. 48.60	48.18	— 0.42	74. 2. 47.54	48.70	+ 1.16
	7.	23.	56.	18.4	3. 0. 14.58	14.65	+ 0.07	72. 55. 19.73	23.90	+ 4.17
	11.	23.	56.	8.1	3. 15. 50.56	50.09	— 0.47	71. 52. 32.29	32.70	+ 0.41
	14.	23.	56.	6.1	3. 27. 38.22	37.72	— 0.50	71. 8. 34.66	34.40	— 0.26
	15.	23.	56.	6.5	3. 31. 35.14	34.76	— 0.38	....	...	...
	16.	23.	56.	7.4	3. 35. 32.62	32.39	— 0.23	70. 40. 47.40	50.10	+ 2.70
	18.	23.	56.	11.2	3. 43. 29.48	29.39	— 0.09	70. 14. 23.20	23.70	+ 0.50
	19.	23.	56.	14.2	3. 47. 29.09	28.75	— 0.34	70. 1. 39.42	40.50	+ 1.08
	22.	23.	56.	25.9	3. 59. 30.54	30.21	— 0.33	69. 25. 34.01	33.60	— 0.41
	23.	23.	56.	31.0	4. 3. 32.16	31.78	— 0.38	69. 14. 14.18	13.10	— 1.08
	25.	23.	56.	41.3	4. 11. 36.66	36.48	— 0.18	68. 52. 37.73	36.30	— 1.43
	30.	23.	57.	19.6	4. 31. 56.83	56.56	— 0.27	68. 4. 58.65	60.20	+ 1.55
	31.	23.	57.	28.3	4. 36. 2.09	1.87	— 0.22	67. 56. 35.88	36.90	+ 1.02
June	4.	23.	58.	7.0	4. 52. 27.17	26.80	— 0.37	67. 26. 56.52	56.10	— 0.42
	9.	23.	59.	2.4	5. 13. 5.43	4.98	— 0.45	66. 58. 44.75	44.10	— 0.65
	13.	23.	59.	50.6	5. 29. 40.00	39.79	— 0.21	66. 43. 25.27	26.30	+ 1.03
	23.	0.	1.	47.0	6. 7. 5.76	5.33	— 0.43	66. 33. 4.65	1.80	— 2.85
	28.	0.	2.	50.6	6. 27. 52.29	52.06	— 0.23	66. 41. 41.30	42.10	+ 0.80
	29.	0.	3.	2.9	6. 32. 1.19	0.93	— 0.26	66. 44. 41.66	40.10	— 1.56
	30.	0.	3.	14.7	6. 36. 9.67	9.57	— 0.10	....	...	...
July	3.	0.	3.	49.3	6. 48. 34.00	33.95	— 0.05	67. 0. 38.55	36.30	— 2.25
	11.	0.	5.	6.7	7. 21. 24.10	23.92	— 0.18	67. 51. 34.12	33.60	— 0.52
	13.	0.	5.	22.0	7. 29. 32.51	32.34	— 0.17	....	...	...
	15.	0.	5.	35.3	7. 37. 38.98	38.92	— 0.06	....	...	...
	18.	0.	5.	52.0	7. 49. 45.37	45.18	— 0.19	68. 56. 7.49	8.20	+ 0.71
	19.	0.	5.	56.6	7. 53. 46.60	46.25	— 0.35	69. 6. 48.99	49.10	+ 0.11
	20.	0.	6.	0.2	7. 57. 46.75	46.80	+ 0.05	69. 17. 54.52	51.20	— 3.32
	21.	0.	6.	3.9	8. 1. 46.97	46.81	— 0.16	69. 29. 16.52	14.30	— 2.22
	22.	0.	6.	6.7	8. 5. 46.38	46.27	— 0.11	69. 40. 58.51	58.20	— 0.31
	24.	0.	6.	10.9	8. 13. 43.73	43.50	— 0.23	....	...	...
	25.	0.	6.	11.8	8. 17. 41.17	41.25	+ 0.08	70. 18. 13.10	11.60	— 1.50
	28.	0.	6.	11.9	....	...	...	70. 58. 22.14	22.30	+ 0.16
	29.	0.	6.	10.6	....	...	...	71. 12. 25.22	24.00	— 1.22
Aug.	2.	0.	5.	59.5	....	...	...	72. 11. 33.51	32.90	— 0.61
	11.	0.	4.	58.9	9. 23. 29.56	29.31	— 0.25	....	...	...
	14.	0.	4.	28.2	9. 34. 48.39	48.32	— 0.07	....	...	...
	16.	0.	4.	5.4	9. 42. 18.66	18.36	— 0.30	76. 12. 59.75	57.00	— 2.75
	19.	0.	3.	27.1	9. 53. 29.90	29.66	— 0.24	77. 10. 48.25	46.10	— 2.15
	25.	0.	1.	57.9	10. 15. 39.81	39.69	— 0.12	79. 11. 48.57	47.50	— 1.07
	26.	0.	1.	41.2	10. 19. 19.59	19.84	+ 0.25	....	...	...
	28.	0.	1.	7.7	10. 26. 39.12	38.94	— 0.18	80. 14. 44.02	41.70	— 2.32
	29.	0.	0.	50.0	....	...	...	80. 35. 60.71	58.80	— 1.91

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the SUN'S CENTER *concluded.*

Mean Solar Time of Observation.		R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N.P.D. from Observation.	Seconds of Tabular N.P.D.	Apparent Error of Tables in N.P.D.
1854.	d h m s	h m s	s	s	° ' "	"	"
Aug.	30. 0. 0. 32.1	10. 33. 56.48	56.52	+ 0.04	80. 57. 25.37	24.70	- 0.67
	31. 23. 59. 55.4	10. 41. 12.83	12.70	- 0.13	81. 40. 44.36	42.00	- 2.36
Sept.	1. 23. 59. 36.5	10. 44. 50.44	50.30	- 0.14	82. 2. 33.79	32.60	- 1.19
	3. 23. 58. 57.7	10. 52. 4.69	4.65	- 0.04	82. 46. 39.82	36.50	- 3.32
	5. 23. 58. 17.9	10. 59. 17.80	17.97	+ 0.17	83. 31. 10.73	8.20	- 2.53
	6. 23. 57. 57.8	11. 2. 54.29	54.29	0.00	83. 53. 33.26	33.80	+ 0.54
	7. 23. 57. 37.8	11. 6. 30.71	30.43	- 0.28	84. 16. 6.39	5.40	- 0.99
	8. 23. 57. 17.0	....	...	...	84. 38. 42.12	42.70	+ 0.58
	10. 23. 56. 35.6	11. 17. 18.00	17.91	- 0.09	85. 24. 13.49	13.50	+ 0.01
	11. 23. 56. 14.6	11. 20. 53.58	53.50	- 0.08	85. 47. 11.78	6.30	- 5.48
	14. 23. 55. 11.5	11. 31. 39.97	39.89	- 0.08	86. 56. 12.00	11.00	- 1.00
	20. 23. 53. 5.5	11. 53. 12.84	12.59	- 0.25	89. 15. 47.32	47.70	+ 0.38
	21. 23. 52. 44.6	11. 56. 48.52	48.23	- 0.29	89. 39. 13.25	11.10	- 2.15
	24. 23. 51. 42.6	12. 7. 35.98	35.85	- 0.13	....	...	...
	25. 23. 51. 22.2	12. 11. 12.08	12.00	- 0.08	91. 12. 55.45	52.10	- 3.35
	26. 23. 51. 2.1	12. 14. 48.41	48.33	- 0.08	91. 36. 20.02	17.40	- 2.62
	27. 23. 50. 42.4	12. 18. 25.24	24.85	- 0.39	91. 59. 43.28	41.90	- 1.38
	28. 23. 50. 22.3	12. 22. 1.63	1.59	- 0.04	....	...	...
	29. 23. 50. 2.8	12. 25. 38.67	38.55	- 0.12	92. 46. 27.27	27.30	+ 0.03
Oct.	1. 23. 49. 24.5	12. 32. 53.34	53.25	- 0.09	93. 33. 8.27	5.40	- 2.87
	2. 23. 49. 5.8	12. 36. 31.18	31.03	- 0.15	93. 56. 18.09	20.90	+ 2.81
	3. 23. 48. 47.3	....	...	...	94. 19. 33.87	33.50	- 0.37
	4. 23. 48. 29.1	12. 43. 47.46	47.57	+ 0.11	94. 42. 46.00	43.00	- 3.00
	9. 23. 47. 4.9	13. 2. 5.79	5.72	- 0.07	96. 37. 33.34	30.80	- 2.54
	10. 23. 46. 49.4	13. 5. 46.80	46.70	- 0.10	....	...	...
	11. 23. 46. 34.3	13. 9. 28.19	28.18	- 0.01	97. 22. 56.14	51.70	- 4.44
	12. 23. 46. 20.0	13. 13. 10.43	10.18	- 0.25	97. 45. 23.48	23.50	+ 0.02
	15. 23. 45. 39.5	13. 24. 19.47	19.51	+ 0.04	98. 52. 23.62	19.50	- 4.12
	18. 23. 45. 4.6	13. 35. 34.13	34.17	+ 0.04	....	...	...
	22. 23. 44. 27.2	13. 50. 42.89	42.72	- 0.17	101. 23. 51.64	50.00	- 1.64
	23. 23. 44. 19.5	13. 54. 31.69	31.54	- 0.15	101. 44. 48.41	50.60	+ 2.19
	25. 23. 44. 6.2	14. 2. 11.49	11.27	- 0.22	102. 26. 20.32	18.90	- 1.42
	26. 23. 44. 0.8	14. 6. 2.63	2.21	- 0.42	102. 46. 50.09	45.80	- 4.29
	27. 23. 43. 55.5	14. 9. 53.89	53.88	- 0.01	103. 7. 2.87	0.70	- 2.17
	29. 23. 43. 48.1	14. 17. 39.50	39.46	- 0.04	103. 46. 53.63	52.80	- 0.83
	30. 23. 43. 45.6	14. 21. 33.56	33.38	- 0.18	104. 6. 31.22	29.10	- 2.12
	31. 23. 43. 43.6	14. 25. 28.20	28.08	- 0.12	104. 25. 53.74	51.70	- 2.04
Nov.	2. 23. 43. 42.4	14. 33. 20.11	19.85	- 0.26	105. 3. 54.39	54.60	+ 0.21
	5. 23. 43. 46.6	14. 45. 13.90	13.62	- 0.28	105. 59. 10.35	6.70	- 3.65
	9. 23. 44. 3.6	15. 1. 17.19	17.10	- 0.09	107. 8. 59.89	57.70	- 2.19
	22. 23. 46. 34.5	15. 55. 3.72	3.33	- 0.39	110. 21. 31.39	30.40	- 0.99
	28. 23. 48. 28.9	16. 20. 37.80	37.79	- 0.01	111. 29. 44.11	44.50	+ 0.39
	29. 23. 48. 50.6	16. 24. 56.13	55.97	- 0.16	111. 39. 44.41	42.50	- 1.91
	30. 23. 49. 12.9	16. 29. 15.01	14.79	- 0.22	111. 49. 15.88	15.70	- 0.18
Dec.	1. 23. 49. 35.5	16. 33. 34.25	34.25	0.00	111. 58. 23.59	23.70	+ 0.11
	3. 23. 50. 23.0	16. 42. 15.06	14.99	- 0.07	112. 15. 22.64	23.30	+ 0.66
	5. 23. 51. 12.8	16. 50. 58.10	58.03	- 0.07	112. 30. 37.82	39.40	+ 1.58
	6. 23. 51. 38.6	16. 55. 20.54	20.35	- 0.19	112. 37. 37.86	38.00	+ 0.14
	8. 23. 52. 31.5	17. 4. 6.66	6.51	- 0.15	112. 50. 15.14	15.40	+ 0.26
	10. 23. 53. 26.3	17. 12. 54.70	54.49	- 0.21	113. 1. 6.38	4.90	- 1.48
	11. 23. 53. 54.1	17. 17. 19.20	19.10	- 0.10	113. 5. 51.14	48.70	- 2.44
	14. 23. 55. 20.0	17. 30. 34.98	35.03	+ 0.05	113. 17. 15.11	14.60	- 0.31
	15. 23. 55. 49.5	17. 35. 1.10	0.92	- 0.18	113. 20. 9.22	7.60	- 1.62
	18. 23. 57. 18.4	17. 48. 19.94	19.87	- 0.07	113. 25. 58.68	57.90	- 0.78
	26. 0. 0. 48.6	18. 19. 26.66	26.53	- 0.13	113. 23. 5.44	4.70	- 0.74
	27. 0. 1. 18.5	18. 23. 53.12	52.91	- 0.21	113. 20. 47.25	46.70	- 0.55
	28. 0. 1. 47.8	....	...	...	113. 18. 1.49	0.50	- 0.99

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF THE MOON.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Jan. 5. 5. 44. 53.1	0. 44. 50.31	50.60	+ 0.29	90. 4. 22.02	19.80	- 2.22
6. 6. 27. 29.2	1. 31. 30.12	30.34	+ 0.22	....	...	...
7. 7. 9. 47.4	2. 17. 51.75	52.16	+ 0.41	....	...	...
8. 7. 52. 48.5	3. 4. 56.43	56.79	+ 0.36	74. 37. 21.63	11.60	- 10.03
19. 16. 35. 6.8	12. 32. 2.66	3.20	+ 0.54	88. 31. 7.02	9.00	+ 1.98
20. 17. 20. 23.3	13. 21. 23.15	23.77	+ 0.62	94. 25. 50.24	52.20	+ 1.96
21. 18. 7. 44.0	14. 12. 48.23	48.66	+ 0.43	100. 16. 36.17	37.90	+ 1.73
22. 18. 58. 25.1	15. 7. 34.19	34.74	+ 0.55	105. 44. 14.84	16.80	+ 1.96
24. 20. 53. 22.1	17. 10. 43.16	43.12	- 0.04	....	...	...
Feb. 2. 4. 21. 19.0	1. 11. 26.15	26.49	+ 0.34	86. 38. 41.49	40.90	- 0.59
3. 5. 4. 46.4	1. 58. 57.17	57.55	+ 0.38	81. 7. 56.88	52.90	- 3.98
7. 8. 6. 41.2	5. 17. 8.15	8.48	+ 0.33	65. 49. 23.43	16.30	- 7.13
8. 8. 56. 15.3	6. 10. 46.94	46.98	+ 0.04	....	...	...
9. 9. 46. 52.3	7. 5. 28.82	28.98	+ 0.16	64. 20. 26.76	20.00	- 6.76
11. 11. 27. 36.9	8. 54. 23.00	23.10	+ 0.10	67. 55. 34.40	29.30	- 5.10
12. 12. 16. 10.8	9. 47. 1.49	1.56	+ 0.07	71. 28. 23.34	18.70	- 4.64
13. 13. 3. 8.6	10. 38. 3.59	3.80	+ 0.21	75. 58. 4.16	3.20	- 0.96
17. 16. 5. 28.4	13. 56. 39.20	39.97	+ 0.77	98. 46. 13.73	17.20	+ 3.47
18. 16. 54. 26.8	14. 49. 42.54	43.33	+ 0.79	104. 20. 25.62	30.50	+ 4.88
Mar. 2. 2. 56. 22.8	1. 36. 39.46	39.81	+ 0.35	83. 24. 54.41	58.70	+ 4.29
3. 3. 40. 44.5	2. 25. 5.06	5.50	+ 0.44	78. 1. 30.95	28.90	- 2.05
5. 5. 11. 44.2	4. 4. 12.84	13.16	+ 0.32	69. 22. 6.58	1.60	- 4.98
6. 5. 59. 23.3	4. 55. 56.30	56.67	+ 0.37	66. 25. 48.79	43.30	- 5.49
9. 8. 29. 33.0	7. 38. 20.31	20.35	+ 0.04	64. 41. 49.79	42.70	- 7.09
10. 9. 19. 46.9	8. 32. 38.97	38.87	- 0.10	66. 39. 22.33	15.70	- 6.63
11. 10. 8. 55.5	9. 25. 52.27	52.12	- 0.15	69. 48. 35.83	31.40	- 4.43
12. 10. 56. 42.4	10. 17. 43.51	43.41	- 0.10	74. 0. 64.70	58.50	- 6.20
13. 11. 43. 15.8	11. 8. 21.15	21.12	- 0.03	79. 5. 13.09	7.50	- 5.59
16. 14. 1. 59.0	13. 39. 16.76	17.24	+ 0.48	96. 59. 1.10	6.40	+ 5.30
17. 14. 50. 1.4	14. 32. 23.59	24.28	+ 0.69	102. 51. 0.40	9.80	+ 9.40
19. 16. 38. 42.5	16. 28. 15.67	16.62	+ 0.95	112. 16. 31.79	42.70	+ 10.91
21. 18. 38. 54.4	18. 36. 40.42	41.68	+ 1.26	....	...	...
April 1. 3. 3. 34.4	3. 42. 8.89	9.13	+ 0.24	70. 44. 28.29	24.40	- 3.89
3. 4. 40. 9.6	5. 26. 53.06	53.11	+ 0.05	....	...	...
4. 5. 30. 16.9	6. 21. 5.10	5.35	+ 0.25	63. 51. 50.10	44.10	- 6.00
5. 6. 20. 49.0	7. 15. 42.12	42.42	+ 0.30	64. 1. 32.53	26.30	- 6.23
6. 7. 10. 59.1	8. 9. 56.94	57.17	+ 0.23	65. 27. 58.84	51.60	- 7.24
7. 8. 0. 8.8	9. 3. 11.29	11.53	+ 0.24	68. 7. 28.87	23.20	- 5.67
8. 8. 48. 0.8	9. 55. 7.73	7.79	+ 0.06	71. 53. 23.47	17.60	- 5.87
9. 9. 34. 41.6	10. 45. 52.76	52.57	- 0.19	76. 36. 29.58	24.20	- 5.38
10. 10. 20. 39.4	11. 35. 54.64	54.61	- 0.03	82. 5. 26.23	24.50	- 1.73
11. 11. 6. 40.7	12. 26. 0.05	0.01	- 0.04	88. 6. 39.24	37.10	- 2.14
13. 12. 43. 50.8	14. 10. 19.21	19.74	+ 0.53	100. 35. 18.63	22.70	+ 4.07
14. 13. 35. 4.4	15. 6. 37.82	38.40	+ 0.58	106. 18. 24.18	31.60	+ 7.42
15. 14. 31. 2.0	16. 6. 41.18	42.10	+ 0.92	111. 5. 39.08	49.40	+ 10.32
17. 16. 32. 37.6	18. 16. 29.86	31.00	+ 1.14	116. 10. 16.60	24.30	+ 7.70
18. 17. 34. 51.2	19. 22. 50.19	51.61	+ 1.42	115. 56. 20.16	27.70	+ 7.54
19. 18. 34. 59.1	20. 27. 4.53	5.53	+ 1.00	....	...	...
20. 19. 31. 26.8	21. 27. 38.11	38.85	+ 0.74	....	...	...
May 2. 4. 13. 0.0	6. 53. 59.05	59.23	+ 0.18	....	...	...
4. 5. 52. 22.5	8. 41. 31.02	31.22	+ 0.20	66. 45. 5.62	0.60	- 5.02
5. 6. 40. 3.7	9. 33. 16.55	16.81	+ 0.26	70. 1. 54.22	48.50	- 5.72
6. 7. 26. 19.6	10. 23. 36.65	36.84	+ 0.19	74. 17. 41.46	36.80	- 4.66
7. 8. 11. 37.4	11. 12. 58.49	58.36	- 0.13	79. 22. 58.60	53.40	- 5.20
8. 8. 56. 42.7	12. 2. 7.67	7.87	+ 0.20	85. 6. 48.17	46.40	- 1.77
10. 10. 30. 29.8	13. 44. 3.35	3.77	+ 0.42	97. 34. 22.38	21.50	- 0.88
11. 11. 21. 34.3	14. 39. 12.78	13.15	+ 0.37	103. 39. 25.56	27.50	+ 1.94

Feb. 17. A correction $-0^s.34$ has been applied to the Right Ascension given in the Section of *Transits observed*, for an erroneous clock-error, the clock being a temporary one, and the rate unsteady.

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of the MOON—*continued.*

Mean Solar Time of Observation.		R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854.	d h m s	h m s	s	s	° ' "	"	"
May	12. 12. 16. 49.3	15. 38. 33.37	34.24	+ 0.87	109. 3. 53.19	58.00	+ 4.81
	15. 15. 24. 38.5	18. 58. 43.10	44.50	+ 1.40	116. 19. 23.21	25.30	+ 2.09
	18. 18. 21. 10.0	22. 7. 33.30	34.25	+ 0.95	107. 11. 41.36	42.10	+ 0.74
	19. 19. 11. 4.0	23. 1. 32.05	32.41	+ 0.36	101. 53. 9.16	4.30	— 4.86
	31. 3. 46. 47.1	8. 22. 2.01	2.20	+ 0.19	....	...	...
June	1. 4. 34. 35.4	9. 13. 54.74	55.05	+ 0.31	68. 39. 21.65	23.00	+ 1.35
	3. 6. 5. 15.9	10. 52. 43.20	43.33	+ 0.13	77. 11. 32.69	34.30	+ 1.61
	8. 9. 59. 42.5	15. 7. 31.17	31.44	+ 0.27	106. 24. 22.66	27.30	+ 4.64
	10. 11. 59. 49.2	17. 15. 50.67	51.47	+ 0.80	114. 45. 51.54	56.10	+ 4.56
	12. 14. 12. 7.4	19. 36. 23.69	25.13	+ 1.44	115. 42. 53.56	57.90	+ 4.34
	17. 18. 44. 44.1	0. 25. 31.47	31.64	+ 0.17	91. 58. 57.91	51.90	— 6.01
July	3. 6. 11. 57.2	....	...	...	92. 6. 1.97	9.00	+ 7.03
	6. 8. 39. 44.4	15. 37. 43.49	44.06	+ 0.57	109. 4. 47.48	55.60	+ 8.12
	12. 14. 55. 34.5	22. 18. 14.73	16.19	+ 1.46	106. 2. 55.21	50.00	— 5.21
	13. 15. 49. 44.7	23. 14. 30.38	31.34	+ 0.96	100. 15. 12.06	10.40	— 1.66
	14. 16. 35. 53.4	0. 6. 43.24	44.03	+ 0.79	....	...	...
	17. 18. 49. 38.8	2. 32. 40.23	40.58	+ 0.35	76. 49. 33.36	28.60	— 4.76
	18. 19. 34. 35.0	3. 21. 40.35	40.38	+ 0.03	72. 10. 34.80	27.60	— 7.20
	Aug. 6. 10. 33. 42.3	19. 34. 13.40	14.49	+ 1.09	115. 45. 28.95	35.10	+ 6.15
	8. 12. 38. 26.7	21. 47. 11.46	12.93	+ 1.47	108. 40. 3.71	2.50	— 1.21
Aug.	10. 14. 25. 16.1	23. 42. 11.48	12.91	+ 1.43	96. 51. 60.52	55.90	— 4.62
	11. 15. 13. 14.6	0. 34. 14.41	15.55	+ 1.14	90. 29. 11.34	8.00	— 3.34
	12. 15. 59. 15.2	1. 24. 19.17	20.22	+ 1.05	84. 18. 14.57	10.60	— 3.97
	13. 16. 44. 31.8	2. 13. 39.74	40.53	+ 0.79	78. 35. 26.03	21.90	— 4.13
	14. 17. 30. 6.2	3. 3. 18.20	18.69	+ 0.49	73. 33. 31.14	26.90	— 4.24
	29. 4. 25. 17.5	14. 55. 28.86	29.79	+ 0.93	105. 52. 12.00	10.70	— 1.30
	Sept. 1. 7. 14. 4.6	17. 56. 33.33	34.22	+ 0.89	116. 15. 28.73	31.50	+ 2.77
	2. 8. 17. 18.0	19. 3. 53.72	54.90	+ 1.18	116. 27. 51.61	50.70	— 0.91
	3. 9. 20. 35.9	20. 11. 18.59	19.77	+ 1.18	114. 40. 41.18	38.50	— 2.68
	4. 10. 21. 28.7	21. 16. 17.90	19.37	+ 1.47	111. 3. 32.14	26.00	— 6.14
Sept.	5. 11. 18. 31.4	22. 17. 26.49	28.08	+ 1.59	105. 59. 50.78	43.90	— 6.88
	6. 12. 11. 34.3	23. 14. 34.67	36.41	+ 1.74	99. 59. 37.62	30.60	— 7.02
	9. 14. 35. 25.9	1. 50. 39.59	40.89	+ 1.30	80. 56. 49.15	40.80	— 8.35
	10. 15. 21. 55.8	2. 41. 13.70	14.71	+ 1.01	75. 25. 47.96	44.60	— 3.36
	11. 16. 9. 11.5	3. 32. 33.66	34.49	+ 0.83	70. 45. 12.20	8.90	— 3.30
	14. 18. 38. 3.2	6. 13. 39.51	39.93	+ 0.42	....	...	...
	17. 21. 7. 24.0	8. 55. 14.46	15.25	+ 0.79	....	...	...
	27. 4. 8. 37.7	16. 33. 6.34	7.13	+ 0.79	....	...	...
	28. 5. 7. 27.4	17. 36. 2.29	2.42	+ 0.13	116. 1. 56.32	52.20	— 4.12
	29. 6. 8. 51.7	18. 41. 33.25	33.52	+ 0.27	116. 50. 2.93	2.50	— 0.43
	30. 7. 10. 41.5	19. 47. 29.78	30.40	+ 0.62	115. 44. 3.69	2.90	— 0.79
	Oct. 1. 8. 9. 42.3	20. 51. 36.84	37.60	+ 0.76	112. 49. 5.46	1.80	— 3.66
	2. 9. 7. 25.7	21. 52. 26.23	27.24	+ 1.01	108. 22. 37.92	33.70	— 4.22
	3. 10. 0. 31.4	22. 49. 37.16	38.17	+ 1.01	102. 49. 21.67	14.80	— 6.87
	4. 10. 50. 29.6	23. 43. 40.19	41.27	+ 1.08	96. 35. 34.83	29.60	— 5.23
	7. 13. 11. 45.3	2. 17. 8.72	9.61	+ 0.89	77. 49. 30.38	19.20	— 11.18
	8. 13. 59. 13.3	3. 8. 41.11	42.04	+ 0.93	72. 37. 59.24	50.00	— 9.24
	9. 14. 47. 58.1	4. 1. 30.43	31.08	+ 0.65	68. 24. 21.65	12.70	— 8.95
	10. 15. 38. 4.4	4. 55. 41.52	41.84	+ 0.32	....	...	...
	11. 16. 29. 9.2	5. 50. 51.25	51.47	+ 0.22	63. 32. 27.88	24.20	— 3.68
	12. 17. 20. 27.3	6. 46. 14.38	14.21	— 0.17	63. 5. 49.83	47.90	— 1.93
	27. 5. 5. 9.2	19. 28. 3.81	4.41	+ 0.60	....	...	...
	28. 6. 5. 29.8	20. 32. 30.87	31.56	+ 0.69	114. 1. 6.77	6.60	— 0.17
	29. 7. 2. 20.3	21. 33. 27.23	28.04	+ 0.81	110. 3. 53.19	50.90	— 2.29
	30. 7. 55. 15.4	22. 30. 27.60	28.64	+ 1.04	104. 55. 56.33	52.00	— 4.33
	31. 8. 44. 46.8	23. 24. 3.71	4.50	+ 0.79	99. 1. 43.59	38.50	— 5.09
Nov.	2. 10. 17. 48.9	1. 5. 14.21	14.79	+ 0.58	86. 23. 30.22	22.20	— 8.02
	3. 11. 3. 36.3	1. 55. 5.70	6.46	+ 0.76	80. 18. 50.16	42.50	— 7.66
	5. 12. 38. 19.8	3. 37. 57.83	58.52	+ 0.69	70. 5. 42.04	35.10	— 6.94

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of the MOON—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Nov. 6. 13. 28. 7 ⁸	4. 31. 50 ⁵⁸	51 ¹⁰	+ 0 ⁵²	66. 27. 32 ⁶⁷	28 ⁸⁰	— 3 ⁸⁷
9. 16. 2. 28 ⁰	7. 18. 25 ⁷⁶	25 ⁸⁴	+ 0 ⁰⁸	63. 22. 28 ⁸²	31 ⁷⁰	+ 2 ⁸⁸
29. 8. 15. 19 ⁴	0. 48. 51 ⁶¹	52 ³⁵	+ 0 ⁷⁴	88. 27. 56 ³⁷	50 ⁶⁰	— 5 ⁷⁷
Dec. 1. 9. 45. 21 ⁷	2. 27. 1 ⁸⁰	2 ⁰³	+ 0 ²³	76. 44. 26 ⁷³	21 ⁵⁰	— 5 ²³
2. 10. 32. 3 ⁷	3. 17. 48 ⁰⁶	48 ⁶¹	+ 0 ⁵⁵	71. 47. 7 ⁰⁰	0 ⁷⁰	— 6 ³⁰
3. 11. 20. 40 ¹	4. 10. 29 ⁰⁰	29 ²²	+ 0 ²²	67. 45. 35 ⁷⁰	29 ³⁰	— 6 ⁴⁰
5. 13. 2. 47 ¹	6. 0. 45 ⁹⁰	46 ⁴⁰	+ 0 ⁵⁰	63. 18. 35 ²⁶	33 ⁴⁰	— 1 ⁸⁶
6. 13. 54. 34 ⁰	6. 56. 37 ⁸¹	38 ⁵⁵	+ 0 ⁷⁴	63. 7. 0 ⁴⁹	0 ⁴⁰	— 0 ⁰⁹
7. 14. 45. 15 ⁹	7. 51. 24 ⁶²	25 ⁰⁸	+ 0 ⁴⁶	64. 16. 4 ²¹	5 ⁹⁰	+ 1 ⁶⁹
8. 15. 33. 57 ²	8. 44. 10 ⁴⁵	10 ⁷⁴	+ 0 ²⁹	66. 38. 22 ⁹¹	28 ⁰⁰	+ 5 ⁰⁹
9. 16. 20. 15 ²	9. 34. 32 ⁶⁸	32 ⁷⁵	+ 0 ⁰⁷	70. 3. 39 ⁵⁶	40 ⁶⁰	+ 1 ⁰⁴
10. 17. 4. 20 ¹	10. 22. 41 ³⁴	41 ³²	— 0 ⁰²	74. 20. 28 ¹⁰	30 ⁹⁰	+ 2 ⁸⁰
11. 17. 46. 47 ⁶	11. 9. 12 ³⁶	12 ⁵²	+ 0 ¹⁶	79. 18. 17 ⁴⁴	19 ⁷⁰	+ 2 ²⁶
12. 18. 28. 31 ⁶	11. 54. 59 ⁸¹	60 ¹¹	+ 0 ³⁰	84. 47. 8 ²³	13 ⁰⁰	+ 4 ⁷⁷
14. 19. 54. 22 ²	13. 28. 57 ⁶⁴	58 ²⁵	+ 0 ⁶¹	96. 36. 55 ⁶⁷	59 ⁴⁰	+ 3 ⁷³
25. 5. 27. 38 ⁵	23. 43. 13 ⁶¹	14 ¹⁵	+ 0 ⁵⁴	96. 35. 13 ⁵³	7 ¹⁰	— 6 ⁴³
26. 6. 14. 2 ⁸	0. 33. 42 ¹⁶	42 ⁷²	+ 0 ⁵⁶	90. 14. 67 ⁴⁷	59 ⁹⁰	— 7 ⁵⁷
27. 6. 59. 0 ⁸	1. 22. 44 ⁰⁵	44 ⁴⁸	+ 0 ⁴³	84. 4. 37 ²²	29 ⁵⁰	— 7 ⁷²
28. 7. 43. 49 ⁵	2. 11. 36 ⁶⁸	37 ¹⁰	+ 0 ⁴²	78. 18. 51 ⁰⁵	43 ⁴⁰	— 7 ⁶⁵
29. 8. 29. 33 ²	3. 1. 24 ⁴⁸	24 ⁵¹	+ 0 ⁰³	73. 11. 18 ⁰¹	9 ⁸⁰	— 8 ²¹
30. 9. 16. 55 ¹	3. 52. 50 ⁷³	50 ⁸¹	+ 0 ⁰⁸	68. 54. 50 ¹⁹	41 ⁹⁰	— 8 ²⁹
31. 10. 6. 12 ¹	4. 46. 12 ³⁶	12 ¹³	— 0 ²³	65. 41. 43 ⁴⁸	38 ²⁰	— 5 ²⁸

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MERCURY.

Feb. 21. 0. 55. 35 ¹	23. 0. 2 ⁹⁹	3 ²⁵	+ 0 ²⁶	97. 24. 61 ²⁵	57 ⁸⁰	— 3 ⁴⁵
March 3. 1. 14. 59 ⁷	23. 58. 56 ²⁵	56 ¹³	— 0 ¹²	88. 58. 8 ²¹	3 ⁴⁰	— 4 ⁸¹
May 16. 23. 4. 12 ⁷	2. 43. 29 ⁴⁰	29 ⁴⁵	+ 0 ⁰⁵	75. 37. 15 ⁷⁰	13 ³⁰	— 2 ⁴⁰
18. 23. 11. 38 ³	2. 58. 49 ³³	49 ⁷⁸	+ 0 ⁴⁵	74. 9. 27 ⁵⁸	24 ⁸⁰	— 2 ⁷⁸
19. 23. 15. 37 ⁵	3. 6. 45 ⁶⁹	45 ⁸⁶	+ 0 ¹⁷	73. 25. 59 ⁶⁵	55 ⁵⁰	— 4 ¹⁵
Aug. 24. 23. 0. 17 ²	9. 13. 48 ⁹⁵	49 ³⁴	+ 0 ³⁹	73. 7. 38 ⁰³	35 ¹⁰	— 2 ⁹³
25. 23. 3. 5 ⁹	....	....	...	73. 27. 35 ⁹⁸	32 ⁰⁰	— 3 ⁹⁸
29. 23. 15. 59 ⁶	9. 49. 16 ⁶⁸	17 ¹⁶	+ 0 ⁴⁸	75. 14. 54 ⁰¹	50 ⁹⁰	— 3 ¹¹
Sept. 27. 0. 33. 37 ⁵	12. 57. 30 ⁸⁵	30 ⁸²	— 0 ⁰³	95. 57. 5 ⁰⁹	6 ⁶⁰	+ 1 ⁵¹
Oct. 12. 0. 58. 35 ⁵	14. 21. 41 ²⁴	41 ⁰⁰	— 0 ²⁴	....	...	...
28. 1. 15. 52 ⁵	15. 42. 6 ⁰¹	5 ⁶⁷	— 0 ³⁴	112. 35. 50 ⁵⁵	56 ⁸⁰	+ 6 ²⁵
Dec. 11. 22. 30. 38 ⁸	15. 53. 50 ²¹	50 ⁰⁹	— 0 ¹²	108. 31. 50 ³⁸	49 ⁰⁰	— 1 ³⁸
14. 22. 35. 0 ⁴	16. 10. 2 ¹⁷	2 ¹¹	— 0 ⁰⁶	109. 40. 46 ⁶⁵	44 ⁹⁰	— 1 ⁷⁵
27. 23. 3. 37 ⁸	17. 29. 59 ⁵³	59 ²⁰	— 0 ³³	113. 33. 57 ²²	57 ⁸⁰	+ 0 ⁵⁸

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS.

Jan. 13. 3. 3. 48 ⁶	22. 34. 51 ⁸⁰	51 ²⁴	— 0 ⁵⁶	98. 1. 33 ⁸⁸	31 ⁰⁰	— 2 ⁸⁸
14. 3. 2. 19 ⁹	22. 37. 19 ³⁹	19 ⁰⁷	— 0 ³²	97. 36. 56 ⁴²	53 ⁶⁰	— 2 ⁸²
21. 2. 49. 37 ⁶	22. 52. 10 ⁹¹	10 ⁶⁴	— 0 ²⁷	94. 50. 16 ⁸⁹	14 ⁷⁰	— 2 ¹⁹
23. 2. 45. 9 ³	22. 55. 35 ⁰⁰	34 ⁶⁹	— 0 ³¹	94. 5. 16 ⁴⁴	14 ²⁰	— 2 ²⁴
25. 2. 40. 16 ⁰	22. 58. 34 ⁰²	33 ⁶⁸	— 0 ³⁴	93. 21. 50 ⁰⁶	48 ⁰⁰	— 2 ⁰⁶
26. 2. 37. 39 ³	22. 59. 53 ⁴³	53 ²⁹	— 0 ¹⁴	93. 0. 48 ²⁷	45 ⁰⁰	— 3 ²⁷
Feb 2. 2. 16. 0 ⁶	23. 5. 47 ¹³	46 ⁷²	— 0 ⁴¹	90. 49. 16 ⁰⁹	15 ³⁰	— 0 ⁷⁹
3. 2. 12. 23 ⁵	23. 6. 5 ⁹¹	5 ⁶²	— 0 ²⁹	90. 33. 15 ⁰⁰	12 ⁹⁰	— 2 ¹⁰
4. 2. 8. 37 ⁸	23. 6. 16 ¹⁸	16 ⁰⁴	— 0 ¹⁴	90. 17. 60 ⁹⁹	59 ⁵⁰	— 1 ⁴⁹
14. 1. 22. 57 ⁵	22. 59. 53 ⁹⁵	53 ⁷²	— 0 ²³	88. 40. 43 ⁵⁰	42 ⁴⁰	— 1 ¹⁰
16. 1. 12. 6 ⁷	22. 56. 54 ⁴⁰	53 ⁷⁷	— 0 ⁶³	88. 35. 22 ⁹⁰	21 ⁰⁰	— 1 ⁹⁰

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of VENUS—concluded.

Mean Solar Time of Observation.					R. A. from Observation.			Seconds of Tabular R. A.		Apparent Error of Tables in R. A.		N. P. D. from Observation.			Seconds of Tabular N. P. D.		Apparent Error of Tables in N. P. D.	
1854.	d	h	m	s	h	m	s	s	s	o	'	"	"	"	"	"		
Feb.	18.	1.	0.	45.5	22. 53. 24.50			24.05	— 0.45	88. 35. 15.05			13.00			— 2.05		
	21.	0.	42.	57.1	22. 47. 22.82			22.81	— 0.01	88. 44. 53.99			50.00			— 3.99		
March	2.	23.	40.	56.9	22. 24. 38.12			38.20	+ 0.08	90. 30. 35.07			31.70			— 3.37		
April	3.	21.	33.	29.6	22. 22. 59.58			59.91	+ 0.33	96. 10. 23.25			23.20			— 0.05		
	4.	21.	31.	38.3	22. 25. 4.51			4.48	— 0.03	96. 10. 0.05			0.00			— 0.05		
	5.	21.	29.	54.0	22. 27. 14.51			14.42	— 0.09	96. 8. 47.79			52.80			+ 5.01		
	17.	21.	14.	20.2	22. 58. 58.77			58.65	— 0.12	95. 1. 59.34			62.90			+ 3.56		
	19.	21.	12.	34.3	23. 5. 5.62			5.38	— 0.24	94. 42. 10.31			10.00			— 0.31		
	20.	21.	11.	45.4	23. 8. 13.15			12.86	— 0.29	94. 31. 21.98			23.40			+ 1.42		
May	3.	21.	4.	23.8	23. 52. 5.61			5.28	— 0.33	91. 27. 30.15			30.50			+ 0.35		
	14.	21.	1.	32.9	0. 32. 36.34			35.85	— 0.49	88. 3. 33.09			31.60			— 1.49		
	18.	21.	1.	5.1	0. 47. 54.65			54.71	+ 0.06	86. 41. 62.57			58.40			— 4.17		
	25.	21.	0.	57.0	1. 15. 22.41			22.70	+ 0.29	84. 13. 30.01			27.80			— 2.21		
	31.	21.	1.	29.3	1. 39. 34.16			34.26	+ 0.10	82. 3. 15.49			13.20			— 2.29		
June	29.	21.	13.	25.6	3. 45. 52.65			53.21	+ 0.56	72. 23. 36.52			31.70			— 4.82		
July	17.	21.	29.	15.8	5. 12. 43.49			43.71	+ 0.22	68. 35. 40.65			37.10			— 3.55		
	20.	21.	32.	27.1	5. 27. 44.95			45.38	+ 0.43	68. 13. 16.49			13.30			— 3.19		
	21.	21.	33.	32.7	5. 32. 47.29			47.61	+ 0.32	68. 6. 55.56			52.70			— 2.86		
	24.	21.	36.	53.6	5. 47. 58.41			58.73	+ 0.32	....			...			...
	25.	21.	38.	1.9	5. 53. 3.43			3.77	+ 0.34	67. 47. 20.00			17.80			— 2.20		
	27.	21.	40.	20.0	6. 3. 15.07			15.53	+ 0.46	67. 41. 8.08			3.70			— 4.38		
	28.	21.	41.	29.9	6. 8. 21.67			22.17	+ 0.50	67. 38. 53.05			51.20			— 1.85		
Aug.	10.	21.	57.	2.0	7. 15. 11.64			11.79	+ 0.15	68. 6. 35.00			32.90			— 2.10		
	14.	22.	1.	47.9	7. 35. 44.49			44.75	+ 0.26	68. 36. 20.06			18.40			— 1.66		
	21.	22.	9.	53.8	8. 11. 27.66			27.84	+ 0.18	69. 51. 52.23			51.30			— 0.93		
	23.	22.	12.	7.7	8. 21. 34.97			35.21	+ 0.24	70. 18. 44.88			44.30			— 0.58		
	24.	22.	13.	13.6	8. 26. 37.67			37.90	+ 0.23	70. 33. 1.71			1.90			+ 0.19		
	25.	22.	14.	18.7	8. 31. 39.47			39.88	+ 0.41	70. 47. 53.16			53.10			— 0.06		
	28.	22.	17.	30.2	8. 46. 41.12			41.39	+ 0.27	71. 35. 43.01			43.00			— 0.01		
	29.	22.	18.	32.4	8. 51. 40.06			40.34	+ 0.28	71. 52. 44.53			43.50			— 1.03		
	30.	22.	19.	34.4	8. 56. 38.75			38.49	— 0.26	72. 10. 15.84			15.10			— 0.74		
	Sept.	1.	22.	21.	34.4	9. 6. 32.26			32.36	+ 0.10	72. 46. 48.77			49.50			+ 0.73	
3.		22.	23.	31.5	9. 16. 22.75			22.91	+ 0.16	73. 25. 21.59			21.70			+ 0.11		
5.		22.	25.	25.2	9. 26. 9.90			10.11	+ 0.21	74. 5. 47.20			47.30			+ 0.10		
6.		22.	26.	21.0	9. 31. 2.38			2.46	+ 0.08	74. 26. 40.67			41.10			+ 0.43		
11.		22.	30.	47.0	9. 55. 11.86			11.86	0.00	76. 17. 36.01			36.60			+ 0.59		
19.		22.	37.	12.2	10. 33. 10.60			10.47	— 0.13	79. 34. 49.81			50.40			+ 0.59		
21.		22.	38.	41.6	10. 42. 33.29			33.07	— 0.22	80. 27. 25.05			22.90			— 2.15		
24.		22.	40.	50.7	10. 56. 32.44			32.35	— 0.09	81. 48. 16.39			14.40			— 1.99		
25.		22.	41.	32.7	11. 1. 11.07			10.97	— 0.10	82. 15. 42.89			41.30			— 1.59		
26.		22.	42.	14.1	11. 5. 49.13			49.08	— 0.05	82. 43. 24.73			22.00			— 2.73		
27.		22.	42.	55.3	11. 10. 27.21			26.70	— 0.51	83. 11. 16.82			15.60			— 1.22		
Oct.	9.	22.	50.	41.2	12. 5. 32.80			32.63	— 0.17	88. 58. 36.39			34.60			— 1.79		
	11.	22.	51.	56.9	12. 14. 41.86			41.68	— 0.18	89. 57. 57.25			53.30			— 3.95		
	12.	22.	52.	35.0	12. 19. 16.63			16.29	— 0.34	90. 27. 38.40			36.40			— 2.00		
	25.	23.	1.	12.5	13. 19. 10.73			10.20	— 0.53	96. 51. 41.98			39.90			— 2.08		
	26.	23.	1.	55.6	13. 23. 50.48			49.82	— 0.66	97. 20. 38.48			34.80			— 3.68		
	27.	23.	2.	39.0	13. 28. 30.45			30.09	— 0.36	97. 49. 22.81			20.50			— 2.31		
	29.	23.	4.	8.2	13. 37. 53.11			52.70	— 0.41	98. 46. 24.10			21.00			— 3.10		
	31.	23.	5.	40.4	13. 47. 18.73			18.31	— 0.42	99. 42. 41.01			35.00			— 6.01		
Nov.	5.	23.	9.	45.9	14. 11. 7.69			7.29	— 0.40	101. 59. 9.59			5.60			— 3.99		
	8.	23.	12.	24.8	14. 25. 36.63			36.27	— 0.36	103. 17. 45.18			40.90			— 4.28		
	9.	23.	13.	19.9	14. 30. 28.50			28.04	— 0.46	103. 43. 17.19			14.80			— 2.39		
	28.	23.	34.	28.9	16. 6. 35.55			35.27	— 0.28	110. 29. 18.78			17.30			— 1.48		
	29.	23.	35.	48.1	16. 11. 51.44			50.74	— 0.70	110. 45. 34.91			32.80			— 2.11		
	30.	23.	37.	7.7	16. 17. 7.84			7.33	— 0.51	111. 1. 15.24			12.50			— 2.74		

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of MARS.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. h m s	h m s	s	s	° ' "	"	"
Jan. 24. 15. 2. 20.8	11. 18. 44.24	42.87	— 1.37	81. 22. 40.39	23.40	—16.99
Feb. 2. 14. 22. 17.7	11. 14. 3.58	2.26	— 1.32	80. 37. 20.43	2.90	—17.53
3. 14. 17. 36.0	11. 13. 17.66	16.22	— 1.44	80. 30. 60.10	41.60	—18.50
9. 13. 48. 26.7	11. 7. 42.86	41.32	— 1.54	79. 47. 73.78	56.10	—17.68
13. 13. 28. 9.1	11. 3. 8.11	6.58	— 1.53	79. 15. 68.05	50.70	—17.35
18. 13. 1. 59.1	10. 56. 36.59	34.79	— 1.80	78. 33. 31.75	13.70	—18.05
23. 12. 35. 9.2	10. 49. 25.11	23.20	— 1.91	77. 49. 60.08	42.80	—17.28
25. 12. 24. 18.3	10. 46. 25.48	23.62	— 1.86	77. 32. 50.22	33.40	—16.82
27. 12. 13. 25.5	10. 43. 24.07	22.10	— 1.97	77. 15. 61.60	46.00	—15.60
28. 12. 7. 58.6	10. 41. 52.81	51.06	— 1.75	77. 7. 47.81	33.10	—14.71
March 1. 12. 2. 32.1	10. 40. 22.00	20.06	— 1.94	76. 59. 43.92	28.70	—15.22
3. 11. 51. 40.2	10. 37. 20.87	18.93	— 1.94	76. 43. 63.81	49.90	—13.91
10. 11. 14. 2.9	10. 27. 13.78	11.93	— 1.85	75. 55. 67.20	44.20	(—23.00)
11. 11. 8. 46.5	10. 25. 52.49	50.71	— 1.78	75. 49. 64.08	51.70	—12.38
13. 10. 58. 17.5	10. 23. 15.45	13.74	— 1.71	75. 38. 69.27	56.50	—12.77
16. 10. 42. 50.6	10. 19. 35.64	33.69	— 1.95	75. 24. 55.18	42.80	—12.38
17. 10. 37. 46.0	10. 18. 26.81	24.88	— 1.93	75. 20. 43.79	33.70	—10.09
18. 10. 32. 43.7	10. 17. 20.25	18.49	— 1.76	75. 16. 53.79	42.50	—11.29
21. 10. 17. 52.0	10. 14. 16.30	14.64	— 1.66	75. 6. 67.57	57.70	— 9.87
23. 10. 8. 12.0	10. 12. 27.23	25.56	— 1.67	75. 1. 68.52	58.90	— 9.62
24. 10. 3. 26.0	10. 11. 36.99	35.25	— 1.74	74. 59. 65.60	56.80	— 8.80
27. 9. 49. 25.1	10. 9. 23.52	21.81	— 1.71	74. 55. 48.75	39.00	— 9.75
28. 9. 44. 50.7	10. 8. 44.90	43.29	— 1.61	74. 54. 56.64	48.90	— 7.74
29. 9. 40. 19.5	10. 8. 9.50	7.79	— 1.71	74. 54. 24.26	16.50	— 7.76
30. 9. 35. 51.0	10. 7. 36.86	35.31	— 1.55	74. 54. 10.28	1.50	— 8.78
31. 9. 31. 25.9	10. 7. 7.55	5.87	— 1.68	74. 54. 11.88	3.80	— 8.08
April 1. 9. 27. 3.7	10. 6. 41.19	39.46	— 1.73	74. 54. 31.28	23.20	— 8.08
3. 9. 18. 28.1	10. 5. 57.26	55.76	— 1.50	74. 55. 60.99	52.20	— 8.79
4. 9. 14. 14.9	10. 5. 39.95	38.44	— 1.51	74. 57. 7.79	1.30	— 6.49
5. 9. 10. 4.8	10. 5. 25.75	24.10	— 1.65	74. 58. 33.44	26.50	— 6.94
6. 9. 5. 57.5	10. 5. 14.28	12.72	— 1.56	75. 0. 15.16	7.40	— 7.76
7. 9. 1. 53.2	10. 5. 5.82	4.28	— 1.54	75. 2. 12.38	3.80	— 8.58
8. 8. 57. 51.7	10. 4. 60.26	58.75	— 1.51	75. 4. 22.36	15.50	— 6.86
10. 8. 49. 57.4	10. 4. 57.72	56.24	— 1.48	75. 9. 28.91	23.20	— 5.71
11. 8. 46. 4.5	10. 4. 60.74	59.20	— 1.54	75. 12. 24.91	18.70	— 6.21
13. 8. 38. 26.5	10. 5. 14.67	13.33	— 1.34	75. 18. 58.20	51.70	— 6.50
17. 8. 23. 42.8	10. 6. 14.68	13.27	— 1.41	75. 34. 41.66	37.80	— 3.86
18. 8. 20. 8.4	10. 6. 36.29	34.62	— 1.67	75. 39. 13.05	6.30	— 6.75
19. 8. 16. 35.9	10. 6. 59.79	58.43	— 1.36	75. 43. 52.49	47.20	— 5.29
21. 8. 9. 38.8	10. 7. 54.63	53.29	— 1.34	75. 53. 48.80	45.20	— 3.60
24. 7. 59. 30.3	10. 9. 34.15	33.06	— 1.09	76. 10. 14.46	10.20	— 4.26
May 2. 7. 34. 2.8	10. 15. 34.89	33.71	— 1.18	77. 1. 62.65	59.70	— 2.95
4. 7. 28. 0.4	10. 17. 24.64	23.48	— 1.16	77. 16. 42.37	39.50	— 2.87
6. 7. 22. 5.1	10. 19. 21.46	20.37	— 1.09	77. 31. 58.78	57.50	— 1.28

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of MEMPOMENE.

Jan. 24. 12. 19. 53.4	8. 35. 50.09	50.60	+ 0.51	78. 26. 39.46	68.65	+29.19
26. 12. 9. 56.2	8. 33. 44.43	45.05	+ 0.62	78. 9. 45.42	72.72	+27.30
28. 11. 59. 59.8	8. 31. 39.46	40.03	+ 0.57	77. 52. 35.64	65.84	+30.20
Feb. 2. 11. 35. 15.4	8. 26. 33.83	34.52	+ 0.69	77. 9. 31.21	59.15	+27.94
23. 9. 56. 8.2	8. 9. 57.97	...	...	74. 21. 29.19	...	...
25. 9. 47. 17.1	8. 8. 58.51	...	...	74. 7. 50.25	...	...
March 1. 9. 29. 56.1	8. 7. 20.87	...	...	73. 41. 50.69	...	...
2. 9. 25. 40.4	8. 7. 1.07	...	...	73. 35. 41.04	...	...
3. 9. 21. 27.2	8. 6. 43.67	...	...	73. 29. 53.46	...	...
11. 8. 48. 43.2	8. 5. 26.73	...	...	72. 46. 29.49	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VICTORIA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Oct. 11. 15. 26. 52.8	4. 48. 24.63	...	...	67. 11. 3.95	...	...
25. 14. 26. 54.7	4. 43. 28.44	...	...	68. 5. 28.06	...	...
28. 14. 13. 13.7	4. 41. 34.89	...	...	68. 19. 8.93	...	...
30. 14. 3. 57.8	4. 40. 10.55	...	...	68. 28. 41.94	...	...
Dec. 18. 10. 3. 34.7	3. 52. 19.23	...	...	73. 2. 36.00	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of VESTA.

Jan. 24. 14. 47. 44.6	11. 4. 5.61	8.74	+ 3.13	75. 36. 6.01	31.60	+25.59
Feb. 2. 14. 8. 25.1	11. 0. 8.69	12.23	+ 3.54	74. 27. 41.77	69.10	+27.33
3. 14. 3. 54.5	10. 59. 33.91	37.59	+ 3.68	74. 19. 31.23	56.70	+25.47
9. 13. 36. 20.1	10. 55. 34.32	38.22	+ 3.90	73. 28. 38.91	64.90	+25.99
13. 13. 17. 30.6	10. 52. 27.89	31.83	+ 3.94	72. 53. 53.11	78.70	+25.59
18. 12. 53. 34.4	10. 48. 10.59	14.50	+ 3.91	72. 10. 36.74	59.90	+23.16
23. 12. 29. 18.8	10. 43. 33.76	37.68	+ 3.92	71. 28. 41.05	64.40	+23.35
25. 12. 19. 33.1	10. 41. 39.56	43.61	+ 4.05	71. 12. 36.48	59.30	+22.82
27. 12. 9. 46.6	10. 39. 44.59	48.62	+ 4.03	70. 57. 2.70	25.20	+22.50
28. 12. 4. 53.1	10. 38. 46.85	50.99	+ 4.14	70. 49. 27.47	51.10	+23.63
March 1. 11. 59. 59.9	10. 37. 49.36	53.39	+ 4.03	70. 42. 2.33	26.50	+24.17
2. 11. 55. 6.5	10. 36. 51.70	55.91	+ 4.21	70. 34. 51.01	71.80	+20.79
3. 11. 50. 13.4	10. 35. 54.30	58.62	+ 4.32	70. 27. 43.35	67.70	+24.35
10. 11. 16. 14.9	10. 29. 26.13	30.16	+ 4.03	69. 43. 46.92	67.60	+20.68
11. 11. 11. 26.3	10. 28. 33.30	37.38	+ 4.08	69. 38. 21.01	41.60	+20.59
13. 11. 1. 51.9	10. 26. 50.42	54.56	+ 4.14	69. 28. 11.09	30.50	+19.41
16. 10. 47. 38.3	10. 24. 24.14	28.17	+ 4.03	69. 14. 40.69	59.30	+18.61
17. 10. 42. 56.1	10. 23. 37.72	41.70	+ 3.98	69. 10. 39.83	57.50	+17.67
18. 10. 38. 15.2	10. 22. 52.61	56.49	+ 3.88	69. 6. 52.81	70.30	+17.49
21. 10. 24. 20.1	10. 20. 44.93	48.98	+ 4.05	68. 56. 59.06	76.70	+17.64
23. 10. 15. 10.9	10. 19. 27.31	31.24	+ 3.93	68. 51. 37.99	54.60	+16.61
24. 10. 10. 38.7	10. 18. 50.84	54.68	+ 3.84	68. 49. 18.25	35.60	+17.35
27. 9. 57. 11.3	10. 17. 10.94	14.75	+ 3.81	68. 43. 51.82	67.00	+15.18
28. 9. 52. 45.5	10. 16. 40.99	44.82	+ 3.83	68. 42. 33.76	46.70	+12.94
29. 9. 48. 21.4	10. 16. 12.76	16.62	+ 3.86	68. 41. 26.71	40.80	+14.09
30. 9. 43. 59.2	10. 15. 46.37	50.18	+ 3.81	68. 40. 35.05	49.30	+14.25
31. 9. 39. 38.8	10. 15. 21.75	25.53	+ 3.78	68. 39. 57.20	72.00	+14.80
April 1. 9. 35. 20.1	10. 14. 58.95	62.67	+ 3.72	68. 39. 34.33	48.80	+14.47
3. 9. 26. 48.1	10. 14. 18.68	22.44	+ 3.76	68. 39. 29.99	44.10	+14.11
4. 9. 22. 35.1	10. 14. 1.47	5.08	+ 3.61	68. 39. 47.59	62.20	+14.61
5. 9. 18. 23.7	10. 13. 45.94	49.56	+ 3.62	68. 40. 21.11	33.70	+12.59
6. 9. 14. 14.1	10. 13. 32.27	35.90	+ 3.63	68. 41. 6.01	18.40	+12.39
7. 9. 10. 6.5	10. 13. 20.48	24.09	+ 3.61	68. 42. 5.51	16.20	+10.69
8. 9. 6. 0.7	10. 13. 10.60	14.13	+ 3.53	68. 43. 14.35	26.90	+12.55
10. 8. 57. 54.6	10. 12. 56.25	59.77	+ 3.52	68. 46. 13.41	25.90	+12.49
11. 8. 53. 54.4	10. 12. 51.97	55.36	+ 3.39	68. 48. 2.52	13.90	+11.38
13. 8. 45. 59.2	10. 12. 48.53	52.01	+ 3.48	68. 52. 14.51	25.90	+11.39
17. 8. 30. 30.7	10. 13. 3.71	6.98	+ 3.27	69. 2. 56.48	68.40	+11.92
18. 8. 26. 42.9	10. 13. 11.87	15.16	+ 3.29	69. 6. 5.76	16.70	+10.94
19. 8. 22. 56.9	10. 13. 21.83	25.11	+ 3.28	69. 9. 26.46	35.80	+ 9.34
24. 8. 4. 32.7	10. 14. 37.39	40.65	+ 3.26	69. 28. 35.92	46.30	+10.38

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of IRIS.

May 30. 13. 9. 4.4	17. 41. 55.11	28.45	-26.66	113. 22. 77.22	8.34	-68.88
June 28. 10. 45. 5.8	17. 11. 53.04	25.86	-27.18	112. 6. 109.77	25.41	-84.36

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF URANIA.

Mean Solar Time of Observation.	R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
July 24. 12. 58. 22.2	21. 8. 1.88	2.91	+ 1.03	106. 26. 3.60	6.92	+ 3.32
28. 12. 38. 54.1	21. 4. 16.83	17.04	+ 0.21	106. 37. 45.23	41.06	- 4.17
Aug. 15. 11. 10. 19.6	20. 46. 25.71	25.46	- 0.25	107. 29. 53.69	45.80	- 7.89
16. 11. 5. 27.3	20. 45. 29.17	28.90	- 0.27	107. 32. 23.11	18.79	- 4.32
17. 11. 0. 35.9	20. 44. 33.57	33.18	- 0.39	107. 34. 54.34	48.11	- 6.23
22. 10. 36. 33.8	20. 40. 10.24	10.10	- 0.14	107. 46. 12.06	9.67	- 2.39
29. 10. 3. 50.8	20. 34. 57.80	57.64	- 0.16	107. 58. 31.71	30.05	- 1.66
Sept. 2. 9. 45. 44.9	20. 32. 35.12	35.02	- 0.10	108. 3. 29.92	26.92	- 3.00
5. 9. 32. 29.6	20. 31. 7.28	7.16	- 0.12	108. 6. 5.67	6.06	+ 0.39
6. 9. 28. 8.6	20. 30. 42.17	41.64	- 0.53	108. 6. 49.14	46.88	- 2.26
9. 9. 15. 15.7	20. 29. 36.78	36.66	- 0.12	108. 8. 13.99	12.09	- 1.90
12. 9. 2. 40.9	20. 28. 49.60	49.39	- 0.21	108. 8. 45.30	41.49	- 3.81
21. 8. 26. 44.2	20. 28. 16.00	16.06	+ 0.06	108. 4. 31.04	33.13	+ 2.09

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PHOECA.

Nov. 23. 12. 24. 59.4	4. 35. 33.24	36.07	+ 2.83	86. 33. 87.16	50.79	- 36.37
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of MASSILIA.

Feb. 9. 14. 53. 48.1	12. 13. 15.05	92. 12. 13.47
March 2. 13. 19. 26.1	12. 1. 25.12	...	...	90. 52. 53.42	...	...
11. 12. 36. 16.5	11. 53. 37.39	...	...	89. 59. 48.47	...	...
21. 11. 47. 49.3	11. 44. 27.83	...	...	88. 56. 49.88	...	...
27. 11. 19. 0.3	11. 39. 13.45	...	...	88. 20. 26.53	...	...
30. 11. 4. 46.3	11. 36. 46.70	...	...	88. 3. 16.88	...	...
31. 11. 0. 3.8	11. 35. 59.99	...	...	87. 57. 49.26	...	...
April 1. 10. 55. 22.4	11. 35. 14.35	...	...	87. 52. 28.05	...	...
3. 10. 46. 2.9	11. 33. 46.46	...	...	87. 42. 3.24	...	...
7. 10. 27. 39.2	11. 31. 6.00	...	...	87. 23. 8.00	...	...
8. 10. 23. 6.9	11. 30. 29.46	...	...	87. 18. 40.18	...	...
11. 10. 9. 38.7	11. 28. 48.72	...	...	87. 6. 27.42	...	...
13. 10. 0. 47.3	11. 27. 48.94	...	...	86. 59. 13.05	...	...
19. 9. 34. 51.6	11. 25. 28.34	...	...	86. 41. 24.32	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HEBE.

March 30. 13. 57. 45.7	14. 30. 14.53	...	...	83. 40. 19.05	...	...
April 17. 12. 33. 22.8	14. 16. 35.74	34.02	- 1.72	81. 17. 62.78	57.42	- 5.36
24. 11. 59. 45.6	14. 10. 28.94	27.45	- 1.49	80. 34. 44.99	40.09	- 4.90
27. 11. 45. 20.3	14. 7. 50.89	49.30	- 1.59	80. 19. 10.37	2.63	- 7.74
May 3. 11. 16. 35.5	14. 2. 40.66	39.04	- 1.62	79. 53. 47.52	41.29	- 6.23
4. 11. 11. 49.2	14. 1. 50.20	48.77	- 1.43	79. 50. 22.01	15.80	- 6.21
23. 9. 43. 42.6	13. 48. 23.67	...	...	79. 29. 51.62	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of LUTETIA.

Mean Solar Time of Observation.	R.A. from Observation.	Seconds of Tabular R.A.	Apparent Error of Tables in R.A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Feb. 3. 13. 22. 13.8	10. 17. 46.34	...	...	74. 51. 27.42	...	...
17. 12. 14. 16.6	10. 4. 49.78	...	...	73. 30. 50.25	...	...
18. 12. 9. 23.1	10. 3. 52.03	...	...	73. 25. 18.94	...	...
25. 11. 35. 11.4	9. 57. 10.59	...	...	72. 48. 58.55	...	...
March 1. 11. 15. 47.8	9. 53. 29.96	...	...	72. 30. 21.73	...	...
30. 9. 3. 41.1	9. 35. 21.64	...	...	71. 20. 20.52	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of FORTUNA.

Jan. 24. 13. 41. 1.9	9. 57. 11.93	3.38	— 8.55	79. 59. 67.69	19.56	— 48.13
Feb. 2. 12. 57. 41.7	9. 49. 13.63	5.17	— 8.46	79. 18. 50.82	5.51	— 45.31
3. 12. 52. 49.2	9. 48. 16.86	8.24	— 8.62	79. 13. 56.41	6.18	— 50.23
7. 12. 33. 13.6	9. 44. 24.32	16.26	— 8.06	78. 52. 76.70	38.64	— 38.06
9. 12. 23. 24.8	9. 42. 26.97	18.69	— 8.28	78. 42. 56.81	12.14	— 44.67
13. 12. 3. 46.3	9. 38. 31.47	23.33	— 8.14	78. 21. 55.34	9.82	— 45.52
17. 11. 44. 11.2	9. 34. 39.36	31.46	— 7.90	78. 0. 57.08	15.13	— 41.95
18. 11. 39. 18.4	9. 33. 42.30	34.56	— 7.74	77. 55. 51.54	5.42	— 46.12
21. 11. 24. 44.2	9. 30. 55.38	47.53	— 7.85	77. 39. 93.01	51.10	— 41.91
25. 11. 5. 29.2	9. 27. 23.49	15.89	— 7.60	77. 20. 58.47	19.12	— 39.35
March 1. 10. 46. 30.5	9. 24. 7.87	...	...	77. 2. 35.75	...	...
3. 10. 37. 11.0	9. 22. 39.90	...	...	76. 53. 54.07	...	...
11. 10. 0. 35.4	9. 17. 30.72	...	...	76. 23. 31.48	...	...
30. 8. 40. 35.6	9. 12. 12.38	...	...	75. 41. 50.42	...	...

RIGHT ASCENSION and NORTH POLAR DISTANCE of THETIS.

Dec. 18. 12. 6. 11.1	5. 55. 15.78	71. 47. 37.59
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of AMPHITRITE.

March 3. 14. 30. 29.0	13. 16. 36.23	100. 6. 24.85
11. 13. 54. 16.6	13. 11. 50.36	...	...	99. 58. 50.88	...	...
13. 13. 45. 1.1	13. 10. 26.45	...	...	99. 55. 57.62	...	...
17. 13. 26. 15.9	13. 7. 24.40	...	...	99. 48. 23.93	...	...
23. 12. 57. 38.8	13. 2. 21.89	...	...	99. 33. 43.65	...	...
24. 12. 52. 50.9	13. 1. 29.07	...	...	99. 30. 53.25	...	...
28. 12. 33. 28.8	12. 57. 50.69	...	...	99. 18. 42.50	...	...
29. 12. 28. 37.5	12. 56. 55.12	...	...	99. 15. 29.72	...	...
30. 12. 23. 45.9	12. 55. 59.27	...	...	99. 12. 9.50	...	...
31. 12. 18. 53.6	12. 55. 2.72	...	...	99. 8. 54.81	...	...
April 4. 11. 59. 24.5	12. 51. 16.70	...	...	98. 54. 42.19	...	...
8. 11. 39. 56.3	12. 47. 31.49	...	...	98. 40. 1.13	...	...
15. 11. 6. 6.9	12. 41. 12.43	...	...	98. 13. 59.90	...	...

RIGHT ASCENSION and NORTH POLAR DISTANCE of POMONA.

Dec. 18. 8. 7. 6.1	1. 55. 31.56	79. 5. 47.26
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of EGERIA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Sept. 28. 13. 6. 16.4	1. 36. 9.97	14.70	+ 4.73	....	...	...
Oct. 12. 11. 57. 7.0	1. 22. 0.92	3.92	+ 3.00	93. 51. 26.23	8.58	- 17.65
23. 11. 2. 15.6	1. 10. 22.62	25.67	+ 3.05	93. 45. 45.76	23.89	- 21.87
Nov. 16. 9. 8. 36.8	0. 51. 2.54	...	...	92. 26. 37.23	...	...

RIGHT ASCENSION and NORTH POLAR DISTANCE of IRENE.

Jan. 2. 8. 54. 30.3	3. 43. 9.01	73. 34. 22.60
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of EUNOMIA.

Feb. 9. 14. 41. 5.6	12. 0. 30.40	104. 49. 33.72
March 11. 12. 20. 54.5	11. 38. 12.91	4.51	- 8.40	104. 33. 89.73	14.53	- 75.20
21. 11. 32. 39.1	11. 29. 15.09	6.62	- 8.47	103. 52. 130.26	50.55	- 79.71
30. 10. 49. 44.1	11. 21. 42.03	33.69	- 8.34	103. 6. 116.34	35.94	- 80.40
31. 10. 45. 1.3	11. 20. 55.01	46.86	- 8.15	103. 1. 84.65	5.02	- 79.63
April 5. 10. 21. 41.9	11. 17. 14.54	6.46	- 8.08	102. 32. 132.94	53.90	- 79.04

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PROSERPINE.

Aug. 22. 12. 56. 33.3	23. 0. 32.75	...	...	102. 7. 41.74	...	...
29. 12. 23. 7.5	22. 54. 37.38	...	...	102. 41. 53.23	...	...
Sept. 1. 12. 8. 43.2	22. 52. 0.34	...	...	102. 55. 58.91	...	...
4. 11. 54. 18.7	22. 49. 23.16	...	...	103. 9. 41.47	...	...
11. 11. 20. 48.7	22. 43. 23.49	...	...	103. 38. 5.71	...	...
16. 10. 57. 7.5	22. 39. 21.25	...	...	103. 55. 10.36	...	...
20. 10. 38. 26.1	22. 36. 22.95	...	...	104. 6. 27.64	...	...
21. 10. 33. 46.7	22. 35. 39.33	...	...	104. 8. 56.28	...	...
28. 10. 1. (56.7)	....	...	...	104. 22. 51.41	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO.

Feb. 9. 14. 30. 21.3	11. 49. 44.35	44.22	- 0.13	90. 51. 45.50	45.50	0.00
18. 13. 50. 3.6	11. 44. 49.04	48.66	- 0.38	89. 43. 16.88	7.80	- 9.08
23. 13. 27. 3.4	11. 41. 27.83	27.42	- 0.41	88. 59. 54.28	55.80	+ 1.52
25. 13. 17. 45.2	11. 40. 1.22	1.02	- 0.20	88. 41. 53.42	51.60	- 1.82
28. 13. 3. 43.2	11. 37. 46.58	46.34	- 0.24	88. 14. 6.30	5.90	- 0.40
March 1. 12. 59. 1.4	11. 37. 0.57	0.31	- 0.26	88. 4. 41.53	41.80	+ 0.27
2. 12. 54. 19.0	11. 36. 13.94	13.79	- 0.15	87. 55. 12.82	14.20	+ 1.38
3. 12. 49. 35.9	11. 35. 26.64	26.85	+ 0.21	87. 45. 49.98	43.60	- 6.38
11. 12. 11. 46.3	11. 29. 3.20	3.08	- 0.12	86. 28. 51.30	51.30	0.00
21. 11. 24. 39.2	11. 21. 13.91	13.86	- 0.05	84. 55. 28.57	29.40	+ 0.83
23. 11. 15. 19.6	11. 19. 45.89	45.59	- 0.30	84. 37. 47.77	47.00	- 0.77
24. 11. 10. 40.6	11. 19. 2.60	2.47	- 0.13	84. 29. 3.65	5.70	+ 2.05
27. 10. 56. 48.4	11. 16. 57.82	57.70	- 0.12	84. 3. 45.55	45.80	+ 0.25
29. 10. 47. 38.0	11. 15. 39.01	38.79	- 0.22	83. 47. 33.69	32.80	- 0.89

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of JUNO—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
March 30. 10. 43. 4.1	11. 15. 0.92	0.74	— 0.18	83. 39. 38.47	39.30	+ 0.83
31. 10. 38. 31.2	11. 14. 23.90	23.67	— 0.23	83. 31. 55.30	54.80	— 0.50
April 1. 10. 33. 59.3	11. 13. 47.79	47.62	— 0.17	83. 24. 17.83	19.60	+ 1.77
3. 10. 24. 59.0	11. 12. 39.11	38.70	— 0.41	83. 9. 38.04	38.20	+ 0.16
4. 10. 20. 30.2	11. 12. 6.08	5.90	— 0.18	83. 2. 33.13	32.40	— 0.73
5. 10. 16. 2.7	11. 11. 34.46	34.23	— 0.23	82. 55. 36.48	36.70	+ 0.22
6. 10. 11. 36.5	11. 11. 4.06	3.71	— 0.35	82. 48. 56.36	51.40	— 4.96
7. 10. 7. 11.1	11. 10. 34.53	34.37	— 0.16	82. 42. 18.74	16.40	— 2.34
8. 10. 2. 47.2	11. 10. 6.41	6.23	— 0.18	82. 35. 51.97	52.10	+ 0.13
13. 9. 41. 5.8	11. 8. 4.22	4.05	— 0.17	82. 6. 34.13	32.40	— 1.73
17. 9. 24. 7.5	11. 6. 49.34	49.20	— 0.14	81. 46. 23.72	22.40	— 1.32
18. 9. 19. 55.9	11. 6. 33.60	33.72	+ 0.12	81. 41. 54.21	47.40	— 6.81
19. 9. 15. 46.0	11. 6. 19.59	19.56	— 0.03	81. 37. 25.09	23.70	— 1.39
24. 8. 55. 15.6	11. 5. 28.57	28.51	— 0.06	81. 18. 8.98	11.00	+ 2.02

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CERES.

July 20. 13. 24. 26.6	21. 18. 24.33	42.65	+18.32	118. 0. 87.33	22.60	—64.73
28. 12. 46. 25.1	21. 11. 49.00	67.81	+18.81	118. 52. 99.92	36.60	—63.32
Aug. 22. 10. 46. 22.7	20. 50. 0.76	19.76	+19.00	120. 46. 82.86	39.10	—43.76
29. 10. 13. 50.9	20. 44. 59.56	77.98	+18.42	121. 0. 68.74	30.70	—38.04
Sept. 2. 9. 55. 41.3	20. 42. 33.14	51.34	+18.20	121. 4. 80.48	43.40	—37.08
6. 9. 37. 53.1	20. 40. 28.29	45.98	+17.69	121. 6. 56.61	21.60	—35.01
9. 9. 24. 46.8	20. 39. 9.44	26.80	+17.36	121. 5. 93.66	58.50	—35.16
11. 9. 16. 9.8	20. 38. 24.09	41.32	+17.23	121. 4. 89.21	59.20	—30.01
27. 8. 10. 53.8	20. 36. 2.27	18.09	+15.82	120. 38. 49.62	19.30	—30.32
Oct. 12. 7. 15. 32.2	20. 39. 39.89	54.22	+14.33	119. 48. 75.47	44.60	—30.87

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PALLAS.

July 6. 12. 26. 25.4	19. 25. 1.79	2.66	+ 0.87	69. 15. 36.42	35.30	— 1.12
21. 11. 15. 23.3	19. 12. 56.32	57.21	+ 0.89	70. 25. 19.29	15.60	— 3.69
22. 11. 10. 41.0	19. 12. 9.82	10.67	+ 0.85	70. 31. 59.92	56.20	— 3.72
24. 11. 1. 17.7	19. 10. 38.07	39.03	+ 0.96	70. 46. 4.22	0.10	— 4.12
25. 10. 56. 36.8	....	...	...	70. 53. 29.80	22.90	— 6.90
28. 10. 42. 38.2	19. 7. 41.75	42.51	+ 0.76	71. 16. 57.20	51.60	— 5.60
29. 10. 37. 59.6	19. 6. 58.98	60.01	+ 1.03	....	...	...
Aug. 1. 10. 24. 9.2	19. 4. 56.01	56.94	+ 0.93	71. 51. 8.15	5.30	— 2.85
12. 9. 34. 31.7	18. 58. 32.40	33.29	+ 0.89	73. 39. 44.13	37.40	— 6.73
14. 9. 25. 43.2	18. 57. 35.63	36.51	+ 0.88	74. 1. 17.53	11.60	— 5.93
22. 8. 51. 14.2	18. 54. 33.38	34.19	+ 0.81	75. 31. 36.35	28.90	— 7.45
25. 8. 38. 37.6	18. 53. 44.32	45.23	+ 0.91	76. 6. 41.54	33.60	— 7.94
29. 8. 22. 5.9	18. 52. 56.13	57.00	+ 0.87	76. 53. 63.67	56.50	— 7.17
30. 8. 18. 1.2	18. 52. 47.39	48.01	+ 0.62	77. 5. 61.44	51.50	— 9.94
Sept. 1. 8. 9. 55.1	18. 52. 33.05	33.69	+ 0.64	77. 29. 51.17	44.00	— 7.17
2. 8. 5. 53.8	18. 52. 27.64	28.37	+ 0.73	77. 41. 47.95	41.00	— 6.95
4. 7. 57. 55.0	18. 52. 20.61	21.39	+ 0.78	78. 5. 34.71	35.10	+ 0.39
5. 7. 53. 57.5	18. 52. 18.98	19.72	+ 0.74	78. 17. 38.82	31.60	— 7.22
6. 7. 50. 1.1	18. 52. 18.55	19.26	+ 0.71	78. 29. 34.61	27.30	— 7.31
8. 7. 42. 12.0	18. 52. 21.21	21.94	+ 0.73	78. 53. 21.27	15.50	— 5.77
20. 6. 56. 56.0	18. 54. 16.43	16.94	+ 0.51	81. 12. 64.21	57.10	— 7.11
27. 6. 31. 46.4	18. 56. 38.50	39.24	+ 0.74	82. 30. 28.95	20.90	— 8.05
28. 6. 28. 15.2	18. 57. 3.39	3.84	+ 0.45	82. 41. 15.03	4.70	— 10.33

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of BELLONA.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
March 11. 12. 41. 20.2	11. 58. 41.95	41.52	— 0.43	81. 24. 57.89	43.78	— 14.11
21. 11. 54. 33.8	11. 51. 13.41	12.42	— 0.99	79. 57. 64.75	46.33	— 18.42
30. 11. 12. 47.6	11. 44. 49.36	48.36	— 1.00	78. 51. 67.02	55.42	— 11.60
April 3. 10. 54. 31.6	11. 42. 16.56	15.96	— 0.60	78. 27. 55.53	46.12	— 9.41
5. 10. 45. 29.6	11. 41. 6.19	5.52	— 0.67	78. 17. 7.37	0.41	— 6.96
8. 10. 32. 4.3	11. 39. 28.29	28.06	— 0.23	78. 2. 38.00	34.28	— 3.72

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of POLYHYMNIA.

Nov. 3. 11. 36. 54.4	2. 28. 29.18	...	...	73. 21. 13.98	...	...
23. 10. 3. (0)	....	...	...	74. 24. 41.59	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of CALLIOPE.

Feb. 25. 14. 8. 34.6	12. 30. 58.96	...	...	72. 27. 5.23	...	...
March 2. 13. 45. 36.6	12. 27. 39.93	...	...	71. 57. 12.87	...	...
11. 13. 3. 21.7	12. 20. 47.10	...	...	71. 8. 41.92	...	...
21. 12. 15. 35.5	12. 12. 18.53	...	...	70. 27. 21.56	...	...
30. 11. 32. 33.0	12. 4. 38.00	...	...	70. 5. 31.80	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of PSYCHE.

July 19. 12. 22. 37.7	20. 12. 28.69	37.11	+ 8.42	107. 25. 55.55	39.63	— 15.92
20. 12. 17. 52.0	20. 11. 38.74	47.15	+ 8.41	107. 29. 32.13	10.51	— 21.62
28. 11. 39. 41.4	20. 4. 54.33	63.17	+ 8.84	107. 57. 65.07	52.37	— 12.70
Aug. 14. 10. 19. 58.2	19. 51. 59.54	68.38	+ 8.84	108. 56. 20.80	3.61	— 17.19
29. 9. 13. 49.7	19. 44. 48.45	56.93	+ 8.48	109. 36. 36.34	17.58	— 18.76
Sept. 1. 9. 1. 15.7	19. 44. 2.04	10.08	+ 8.04	109. 42. 57.45	36.24	— 21.21
4. 8. 48. 56.1	19. 43. 30.12	...	...	109. 48. 38.85	...	...
5. 8. 44. 52.0	19. 43. 21.87	...	...	109. 50. 17.43	...	...
12. 8. 17. 12.4	19. 43. 13.58	...	...	110. 0. 30.61	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HYGEIA.

Feb. 2. 12. 25. 53.5	9. 17. 20.24	...	...	77. 0. 47.43	...	...
3. 12. 21. 8.2	9. 16. 30.70	...	...	76. 58. 2.85	...	...
7. 12. 2. 6.6	9. 13. 12.24	...	...	76. 46. 44.49	...	...
9. 11. 52. 35.8	9. 11. 32.98	...	...	76. 41. 4.26	...	...
13. 11. 33. 37.0	9. 8. 17.24	...	...	76. 29. 45.55	...	...
17. 11. 14. 43.6	9. 5. 6.98	...	...	76. 18. 38.40	...	...
18. 11. 10. 1.7	9. 4. 20.82	...	...	76. 15. 50.91	...	...
21. 10. 55. 59.5	9. 2. 6.04	...	...	76. 7. 54.69	...	...
23. 10. 46. 41.8	9. 0. 39.85	...	...	76. 2. 47.51	...	...
25. 10. 37. 27.1	8. 59. 16.79	...	...	75. 57. 49.64	...	...
27. 10. 28. 16.4	8. 57. 57.65	...	...	75. 53. 2.93	...	...

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of HYGEIA—*concluded.*

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
March 2. 10. 14. 37.3	8. 56. 6.01	...	...	75. 46. 16.68	...	...
3. 10. 10. 6.4	8. 55. 30.88	...	...	75. 44. 17.14	...	...
11. 9. 34. 42.5	8. 51. 33.59	...	...	75. 29. 25.44	...	...
17. 9. 9. 2.9	8. 49. 29.10	...	...	75. 21. 18.76	...	...
21. 8. 52. 23.7	8. 48. 33.37	...	...	75. 17. 32.88	...	...
30. 8. 16. 16.4	8. 47. 49.11	...	...	75. 13. 36.51	...	...
April 3. 8. 0. 49.0	8. 48. 5.45	...	...	75. 13. 59.07	...	...

RIGHT ASCENSION and NORTH POLAR DISTANCE of EUPHIROSYNE.

Oct. 28. 10. 35. 8.8	1. 2. 54.13	91. 26. 19.10
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RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of JUPITER.

May 18. 16. 12. 29.3	19. 58. 31.44	32.00	+ 0.56	110. 53. 54.24	58.90	+ 4.66
19. 16. 8. 30.3	19. 58. 28.39	29.07	+ 0.68	110. 54. 13.83	17.50	+ 3.67
24. 15. 48. 24.2	19. 58. 1.77	2.53	+ 0.76	110. 56. 22.79	24.10	+ 1.31
June 17. 14. 7. 37.5	19. 51. 35.92	36.58	+ 0.66	111. 18. 10.23	11.10	+ 0.87
19. 13. 58. 56.7	....	...	...	111. 20. 39.84	42.00	+ 2.16
20. 13. 54. 35.5	19. 50. 21.41	21.91	+ 0.50	111. 21. 58.30	59.20	+ 0.90
July 6. 12. 43. 55.5	19. 42. 34.73	35.40	+ 0.67	111. 44. 16.30	18.20	+ 1.90
15. 12. 3. 41.7	19. 37. 43.39	43.95	+ 0.56	111. 57. 9.33	12.70	+ 3.37
19. 11. 45. 47.7	19. 35. 32.63	33.19	+ 0.56	112. 2. 43.95	46.20	+ 2.25
20. 11. 41. 19.2	19. 34. 59.93	60.64	+ 0.71	112. 4. 4.44	7.90	+ 3.46
21. 11. 36. 51.0	19. 34. 27.58	28.20	+ 0.62	112. 5. 27.02	28.80	+ 1.78
22. 11. 32. 22.7	19. 33. 55.15	55.89	+ 0.74	112. 6. 47.02	49.00	+ 1.98
24. 11. 23. 27.2	19. 32. 51.21	51.78	+ 0.57	112. 9. 24.64	26.50	+ 1.86
25. 11. 18. 59.8	19. 32. 19.53	20.02	+ 0.49	112. 10. 43.06	43.90	+ 0.84
28. 11. 5. 38.2	19. 30. 45.56	46.21	+ 0.65	112. 14. 28.29	29.80	+ 1.51
Aug. 1. 10. 47. 54.3	19. 28. 44.93	45.42	+ 0.49	112. 19. 12.10	15.10	+ 3.00
8. 10. 17. 7.5	19. 25. 29.02	29.60	+ 0.58	112. 26. 41.39	43.80	+ 2.41
9. 10. 12. 45.8	19. 25. 3.13	3.54	+ 0.41	112. 27. 43.06	42.30	- 0.76
12. 9. 59. 43.2	19. 23. 48.08	48.58	+ 0.50	112. 30. 27.98	29.10	+ 1.12
14. 9. 51. 4.4	19. 23. 0.96	1.47	+ 0.51	112. 32. 10.19	12.80	+ 2.61
17. 9. 38. 10.8	19. 21. 54.90	55.41	+ 0.51	112. 34. 36.17	36.90	+ 0.73
22. 9. 16. 54.7	19. 20. 18.05	18.52	+ 0.47	112. 38. 2.72	5.70	+ 2.98
24. 9. 8. 29.3	19. 19. 44.38	44.71	+ 0.33	112. 39. 15.87	18.10	+ 2.23
25. 9. 4. 17.3	19. 19. 28.24	28.92	+ 0.68	112. 39. 55.85	51.80	(- 4.05)
30. 8. 43. 30.7	19. 18. 21.00	21.35	+ 0.35	112. 42. 16.10	16.80	+ 0.70
31. 8. 39. 23.8	19. 18. 9.98	10.17	+ 0.19	112. 42. 38.99	40.90	+ 1.91
Sept. 1. 8. 35. 17.2	19. 17. 59.32	59.79	+ 0.47	112. 43. 3.20	3.50	+ 0.30
2. 8. 31. 11.8	19. 17. 49.74	50.20	+ 0.46	112. 43. 23.33	24.40	+ 1.07
4. 8. 23. 3.3	19. 17. 33.02	33.43	+ 0.41	112. 44. 0.00	1.40	+ 1.40
5. 8. 19. 0.1	19. 17. 25.77	26.26	+ 0.49	112. 44. 15.00	17.50	+ 2.50
6. 8. 14. 58.0	19. 17. 19.47	19.90	+ 0.43	112. 44. 30.60	32.00	+ 1.40
7. 8. 10. 56.4	19. 17. 13.84	14.35	+ 0.51	112. 44. 43.76	44.90	+ 1.14
8. 8. 6. 55.9	19. 17. 9.23	9.62	+ 0.39	112. 44. 55.41	56.30	+ 0.89
9. 8. 2. 56.1	19. 17. 5.34	5.70	+ 0.36	112. 45. 5.98	6.00	+ 0.02
11. 7. 54. 58.9	19. 16. 59.88	60.34	+ 0.46	112. 45. 19.71	20.80	+ 1.09
12. 7. 51. 1.6	19. 16. 58.53	58.90	+ 0.37	112. 45. 25.65	25.80	+ 0.15
18. 7. 27. 34.8	19. 17. 7.21	7.59	+ 0.38	112. 45. 20.47	22.90	+ 2.43
20. 7. 19. 52.5	19. 17. 16.72	17.11	+ 0.39	112. 45. 6.39	9.30	+ 2.91
21. 7. 16. 2.6	19. 17. 22.72	23.11	+ 0.39	112. 44. 57.36	60.10	+ 2.74
22. 7. 12. 13.6	19. 17. 29.69	29.94	+ 0.25	112. 44. 47.39	49.30	+ 1.91

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of the CENTER of JUPITER—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Sept. 25. 7. 0. 51.2	19. 17. 55.10	55.36	+ 0.26	112. 44. 6.79	7.50	+ 0.71
26. 6. 57. 5.3	19. 18. 5.10	5.47	+ 0.37	112. 43. 49.89	50.40	+ 0.51
27. 6. 53. 20.3	19. 18. 16.03	16.39	+ 0.36	112. 43. 30.62	31.80	+ 1.18
28. 6. 49. 36.2	19. 18. 27.84	28.11	+ 0.27	112. 43. 11.14	11.50	+ 0.36
29. 6. 45. 52.7	19. 18. 40.29	40.63	+ 0.34			
30. 6. 42. 10.1	19. 18. 53.70	53.94	+ 0.24	112. 42. 25.67	26.20	+ 0.53
Oct. 2. 6. 34. 47.2	19. 19. 22.65	22.92	+ 0.27	112. 41. 33.37	34.60	+ 1.23
4. 6. 27. 27.3	19. 19. 54.70	55.01	+ 0.31	112. 40. 33.92	36.60	+ 2.68
11. 6. 2. 11.8	19. 22. 10.91	11.11	+ 0.20	112. 36. 20.97	23.30	+ 2.33
12. 5. 58. 38.0	19. 22. 33.02	33.50	+ 0.48	112. 35. 40.38	40.70	+ 0.32
28. 5. 3. 14.1	19. 30. 4.88	5.26	+ 0.38	112. 20. 32.41	32.90	+ 0.49
30. 4. 56. 30.2	19. 31. 12.98	13.28	+ 0.30	112. 18. 7.42	8.80	+ 1.38
Nov. 1. 4. 49. 48.6	19. 32. 23.38	23.65	+ 0.27	112. 15. 38.01	37.80	— 0.21
3. 4. 43. 9.2	19. 33. 36.08	36.30	+ 0.22	112. 12. 58.49	59.80	+ 1.31
9. 4. 23. 24.0	19. 37. 26.98	27.35	+ 0.37	112. 4. 23.33	23.30	— 0.03
11. 4. 16. 53.3	19. 38. 48.29	48.53	+ 0.24	112. 1. 16.34	17.00	+ 0.66

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES of the CENTER of SATURN.

Jan. 2. 8. 45. 39.7	3. 34. 16.97	16.83	— 0.14	72. 57. 39.57	31.00	— 8.57
14. 7. 56. 53.1	3. 32. 41.02	40.73	— 0.29	72. 59. 62.18	52.20	— 9.98
21. 7. 28. 54.5	3. 32. 13.76	13.68	— 0.08	72. 59. 36.31	27.30	— 9.01
23. 7. 20. 59.2	3. 32. 10.29	10.02	— 0.27	72. 59. 14.20	5.30	— 8.90
26. 7. 9. 9.3	3. 32. 8.08	7.96	— 0.12	72. 58. 29.77	19.90	— 9.87
28. 7. 1. 18.6	3. 32. 9.19	8.89	— 0.30	72. 57. 49.90	41.40	— 8.50
30. 6. 53. 29.4	3. 32. 11.89	11.67	— 0.22	72. 56. 65.41	56.30	— 9.11
Feb. 2. 6. 41. 49.3	3. 32. 19.54	19.30	— 0.24	72. 55. 45.13	36.40	— 8.73
3. 6. 37. 56.9	3. 32. 23.06	22.76	— 0.30	72. 55. 16.00	6.50	— 9.50
13. 5. 59. 37.1	3. 33. 22.43	22.20	— 0.23	72. 48. 51.06	42.90	— 8.16
18. 5. 40. 43.6	3. 34. 8.61	8.40	— 0.21	72. 44. 43.55	36.10	— 7.45
Sept. 17. 17. 11. 50.8	4. 59. 2.63	2.89	+ 0.26	69. 1. 49.52	43.40	— 6.12
20. 17. 0. 15.4	4. 59. 14.96	15.14	+ 0.18	69. 1. 53.69	46.70	— 6.99
21. 16. 56. 22.7	4. 59. 18.17	18.30	+ 0.13	69. 1. 56.52	49.20	— 7.32
24. 16. 44. 41.6	4. 59. 24.78	24.96	+ 0.18	69. 2. 9.93	0.60	— 9.33
27. 16. 32. 56.4	4. 59. 27.36	27.41	+ 0.05	69. 2. 26.11	18.10	— 8.01
Oct. 2. 16. 13. 11.5	4. 59. 21.93	22.14	+ 0.21	69. 2. 66.81	59.70	— 7.11
11. 15. 37. 9.7	4. 58. 43.24	43.45	+ 0.21	69. 4. 60.37	53.20	— 7.17
12. 15. 33. 7.4	4. 58. 36.83	36.87	+ 0.04	69. 5. 14.74	8.70	— 6.04
20. 15. 0. 31.5	4. 57. 28.02	28.32	+ 0.30	69. 7. 42.41	34.00	— 8.41
25. 14. 39. 55.4	4. 56. 31.30	31.71	+ 0.41	69. 9. 29.19	22.30	— 6.89
26. 14. 35. 47.1	4. 56. 18.91	19.19	+ 0.28	69. 9. 51.99	45.50	— 6.49
28. 14. 27. 29.2	4. 55. 52.67	53.01	+ 0.34	69. 10. 42.93	33.20	— 9.73
30. 14. 19. 9.9	4. 55. 25.11	25.35	+ 0.24	69. 11. 31.71	22.90	— 8.81
31. 14. 14. 59.5	4. 55. 10.64	10.98	+ 0.34	69. 11. 56.09	48.40	— 7.69
Nov. 6. 13. 49. 51.1	4. 53. 37.43	37.73	+ 0.30	69. 14. 36.80	30.40	— 6.40
8. 13. 41. 25.9	4. 53. 3.97	4.14	+ 0.17	69. 15. 34.99	27.60	— 7.39
9. 13. 37. 12.6	4. 52. 46.53	46.91	+ 0.38	69. 15. 65.33	56.70	— 8.63
14. 13. 16. 3.4	4. 51. 16.65	16.80	+ 0.15	69. 18. 32.19	27.40	— 4.79
16. 13. 7. 33.8	4. 50. 38.78	39.08	+ 0.30	69. 19. 37.20	29.80	— 7.40
22. 12. 42. 1.1	4. 48. 41.15	41.32	+ 0.17	69. 22. 50.57	42.40	— 8.17
23. 12. 37. 44.9	4. 48. 20.83	21.14	+ 0.31	69. 23. 22.51	15.10	— 7.41
24. 12. 33. 28.7	4. 48. 0.50	0.83	+ 0.33	69. 23. 54.55	48.00	— 6.55
27. 12. 20. 39.6	4. 46. 59.00	59.25	+ 0.25	69. 25. 32.44	27.10	— 5.34
Dec. 2. 11. 59. 16.1	4. 45. 14.72	15.22	+ 0.50	69. 28. 21.05	12.90	— 8.15
5. 11. 46. 26.0	4. 44. 12.24	12.45	+ 0.21	69. 29. 58.16	52.00	— 6.16

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of SATURN—concluded.

Mean Solar Time of Observation.	R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854. d h m s	h m s	s	s	° ' "	"	"
Dec. 7. 11. 37. 52.4	4. 43. 30.35	30.66	+ 0.31	69. 30. 65.66	57.50	— 8.16
9. 11. 29. 19.1	4. 42. 48.73	49.01	+ 0.28	69. 32. 8.90	2.50	— 6.40
12. 11. 16. 29.7	4. 41. 46.88	47.02	+ 0.14	69. 33. 47.06	38.40	— 8.66
16. 10. 59. 25.0	4. 40. 25.58	25.77	+ 0.19	69. 35. 50.10	42.60	— 7.50
18. 10. 50. 53.4	4. 39. 45.72	45.96	+ 0.24	69. 36. 50.19	42.60	— 7.59
20. 10. 42. 22.4	4. 39. 6.48	6.82	+ 0.34	69. 37. 47.36	41.00	— 6.36
27. 10. 12. 41.1	4. 36. 56.18	56.43	+ 0.25	69. 40. 57.27	49.60	— 7.67
28. 10. 8. 27.6	4. 36. 38.52	38.78	+ 0.26	69. 41. 21.24	14.30	— 6.94
30. 10. 0. 1.3	4. 36. 3.97	4.31	+ 0.34	69. 42. 10.74	1.70	— 9.04

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of the CENTER of URANUS.

Jan. 2. 7. 37. 12.7	2. 25. 38.71	50.82	+ 12.11	75. 58. 117.44	57.60	— 59.84
13. 6. 53. 38.6	2. 25. 19.61	31.61	+ 12.00	76. 0. 72.10	12.00	— 60.10
14. 6. 49. 42.1	2. 25. 19.00	31.07	+ 12.07	76. 0. 72.81	12.80	— 60.01
23. 6. 14. 23.3	2. 25. 23.47	35.37	+ 11.90	75. 59. 93.46	34.80	— 58.66
Sept. 10. 15. 37. 19.4	2. 56. 39.85	52.85	+ 13.00	73. 33. 112.16	59.60	— 52.56
11. 15. 33. 19.6	2. 56. 35.95	48.99	+ 13.04	73. 34. 72.72	16.70	— 56.02
17. 15. 9. 17.3	2. 56. 9.01	22.03	+ 13.02	73. 36. 72.11	15.50	— 56.61
26. 14. 33. 2.1	2. 55. 16.85	30.07	+ 13.22	73. 40. 60.48	3.00	— 57.48
27. 14. 28. 59.7	2. 55. 10.33	23.50	+ 13.17	73. 40. 89.24	31.70	— 57.54
28. 14. 24. 57.1	2. 55. 3.54	16.79	+ 13.25	73. 41. 56.99	1.00	— 55.99
Oct. 12. 13. 28. 6.8	2. 53. 15.68	28.83	+ 13.15	73. 48. 109.75	51.80	— 57.95
25. 12. 35. 1.8	2. 51. 17.23	30.48	+ 13.25	73. 57. 85.42	28.80	— 56.62
26. 12. 30. 56.3	2. 51. 7.54	20.89	+ 13.35	73. 58. 67.46	10.70	— 56.76
27. 12. 26. 50.8	2. 50. 57.93	71.26	+ 13.33	73. 58. 111.71	52.90	— 58.81
28. 12. 22. 45.4	2. 50. 48.38	61.59	+ 13.21	73. 59. 94.98	35.20	— 59.78
30. 12. 14. 34.1	2. 50. 28.93	42.14	+ 13.21	74. 1. 58.38	0.40	— 57.98
31. 12. 10. 28.5	2. 50. 19.17	32.36	+ 13.19	74. 1. 101.28	43.20	— 58.08
Nov. 3. 11. 58. 11.3	2. 49. 49.60	62.90	+ 13.30	74. 3. 109.58	52.20	— 57.38
8. 11. 37. 42.6	2. 49. 0.38	13.56	+ 13.18	74. 7. 87.85	28.40	— 59.45
9. 11. 33. 36.9	2. 48. 50.47	63.70	+ 13.23	74. 8. 69.89	11.70	— 58.19
16. 11. 4. 57.2	2. 47. 41.95	55.18	+ 13.23	74. 13. 72.03	12.60	— 59.43
23. 10. 36. 19.5	2. 46. 35.52	48.67	+ 13.15	74. 18. 61.75	5.00	— 56.75
Dec. 1. 10. 3. 40.9	2. 45. 23.96	37.05	+ 13.09	74. 23. 78.96	19.60	— 59.36
2. 9. 59. 36.3	2. 45. 15.32	28.52	+ 13.20	74. 23. 115.76	57.10	— 58.66
5. 9. 47. 24.0	2. 44. 50.62	63.58	+ 12.96	74. 25. 106.29	46.60	— 59.69
7. 9. 39. 16.1	2. 44. 34.58	47.53	+ 12.95	74. 26. 115.53	56.90	— 58.63
18. 8. 54. 42.7	....	...	...	74. 32. 98.00	40.80	— 57.20
26. 8. 22. 30.0	2. 42. 30.47	43.24	+ 12.77	74. 35. 115.97	57.10	— 58.87
28. 8. 14. 28.5	2. 42. 20.79	33.60	+ 12.81	74. 36. 96.25	38.10	— 58.15
30. 8. 6. 27.9	2. 42. 11.97	24.70	+ 12.73	74. 37. 74.43	15.80	— 58.63

RIGHT ASCENSIONS and NORTH POLAR DISTANCES of NEPTUNE.

Aug. 17. 13. 22. 23.9	23. 6. 44.88	45.35	+ 0.47	96. 49. 52.39	48.67	— 3.72
22. 13. 2. 15.9	23. 6. 16.32	16.82	+ 0.50	96. 52. 57.57	53.88	— 3.69
24. 12. 54. 12.6	23. 6. 4.75	5.12	+ 0.37	96. 54. 15.23	9.38	— 5.85
25. 12. 50. 10.7	23. 5. 58.80	59.21	+ 0.41	96. 54. 50.04	47.43	— 2.61
28. 12. 38. 5.3	23. 5. 41.04	41.35	+ 0.31	96. 56. 47.52	42.25	— 5.27
29. 12. 34. 3.2	23. 5. 34.89	35.35	+ 0.46	96. 57. 24.31	20.70	— 3.61
30. 12. 30. 1.4	23. 5. 28.99	29.33	+ 0.34	96. 57. 63.97	59.25	— 4.72
31. 12. 25. 59.4	23. 5. 22.83	23.29	+ 0.46	96. 58. 39.70	37.88	— 1.82

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF NEPTUNE—*concluded.*

Mean Solar Time of Observation.		R. A. from Observation.	Seconds of Tabular R. A.	Apparent Error of Tables in R. A.	N. P. D. from Observation.	Seconds of Tabular N. P. D.	Apparent Error of Tables in N. P. D.
1854.	d h m s	h m s	s	s	° ' "	"	"
Sept.	1. 12. 21. 57.5	23. 5. 16.81	17.23	+ 0.42	96. 59. 19.94	16.55	— 3.39
	2. 12. 17. 55.4	23. 5. 10.67	11.16	+ 0.49	96. 59. 56.99	55.25	— 1.74
	4. 12. 9. 51.6	23. 4. 58.62	58.99	+ 0.37	97. 1. 15.89	12.85	— 3.04
	5. 12. 5. 49.6	23. 4. 52.53	52.89	+ 0.36	97. 1. 53.77	51.55	— 2.22
	6. 12. 1. 47.5	23. 4. 46.31	46.79	+ 0.48	97. 2. 35.43	30.35	— 5.08
	11. 11. 41. 37.6	23. 4. 15.86	16.26	+ 0.40	97. 5. 47.56	43.40	— 4.16
	16. 11. 21. 27.9	23. 3. 45.59	45.94	+ 0.35	97. 8. 57.64	54.08	— 3.56
	20. 11. 5. 20.3	23. 3. 21.52	22.03	+ 0.51	97. 11. 26.53	23.46	— 3.07
	21. 11. 1. 18.7	23. 3. 15.87	16.13	+ 0.26	97. 12. 3.70	0.28	— 3.42
	25. 10. 45. 11.8	23. 2. 52.56	52.86	+ 0.30	97. 14. 29.26	25.00	— 4.26
	26. 10. 41. 10.1	23. 2. 46.69	47.14	+ 0.45	97. 15. 4.11	0.48	— 3.63
	27. 10. 37. 8.5	23. 2. 41.03	41.48	+ 0.45	97. 15. 40.38	35.56	— 4.82
	28. 10. 33. 7.2	23. 2. 35.56	35.84	+ 0.28	97. 16. 16.10	10.30	— 5.80
	29. 10. 29. 5.8	23. 2. 30.04	30.27	+ 0.23	97. 16. 47.77	44.80	— 2.97
	30. 10. 25. 4.1	23. 2. 24.30	24.74	+ 0.44	97. 17. 23.25	18.91	— 4.34
Oct.	2. 10. 16. 59.6	23. 2. 13.43	13.85	+ 0.42	97. 18. 29.24	25.92	— 3.32
	11. 9. 40. 52.6	23. 1. 27.60	27.91	+ 0.31	97. 23. 9.10	6.04	— 3.06
	12. 9. 36. 51.9	23. 1. 22.79	23.16	+ 0.37	97. 23. 38.53	34.88	— 3.65
	26. 8. 40. 52.1	....	...	...	97. 29. 19.27	17.92	— 1.35
	28. 8. 32. 53.3	23. 0. 18.53	18.86	+ 0.33	97. 29. 60.47	57.02	— 3.45
	30. 8. 24. 55.5	....	...	...	97. 30. 36.80	33.19	— 3.61
Nov.	3. 8. 9. 0.4	23. 0. 1.03	1.33	+ 0.30	97. 31. 41.18	37.58	— 3.60
	6. 7. 57. 5.5	22. 59. 53.85	54.07	+ 0.22	97. 32. 26.50	18.27	— 8.23
	9. 7. 45. 11.4	22. 59. 47.52	47.83	+ 0.31	97. 32. 54.96	52.43	— 2.53
	29. 6. 26. 19.9	22. 59. 34.18	34.47	+ 0.29	97. 33. 46.58	42.46	— 4.12
Dec.	2. 6. 14. 34.5	22. 59. 36.53	36.85	+ 0.32	97. 33. 26.33	22.53	— 3.80
	6. 5. 58. 55.8	22. 59. 41.53	41.81	+ 0.28	97. 32. 49.32	44.95	— 4.37
	12. 5. 35. 31.6	22. 59. 52.79	53.08	+ 0.29	97. 31. 30.26	25.13	— 5.13

INVESTIGATION of the POSITION of the ECLIPTIC, from the OBSERVATIONS of the SUN.

Mean Tabular Errors of the Sun in R.A. and N.P.D.; and Errors in Ecliptic Polar Distance, deduced from the Formula,

$$\text{Error in Ecliptic Polar Distance} = R \times \text{Error in R.A.} + S \times \text{Error in N.P.D.}$$

Extent of Group.	Mean Day, 1854.	Error in R. A.	Number of Obs.	Error in N.P.D.	Number of Obs.	Error in Ecliptic N.P.D.
January 13 to January 26	January 20	— 0°12	6	— 0°13	6	— 0°488
February 2 to February 25	February 14	— 0°15	10	+ 0°60	10	— 0°174
February 27 to March 17	March 8	— 0°24	9	+ 1°34	9	— 0°168
March 27 to April 20	April 9	— 0°25	18	+ 1°69	16	+ 0°155
May 1 to May 25	May 17	— 0°31	12	+ 0°68	10	— 0°365
May 30 to July 3	June 17	— 0°26	10	— 0°37	9	— 0°482
July 11 to August 2	July 21	— 0°13	10	— 0°87	10	— 0°485
August 11 to September 3	August 26	— 0°11	11	— 1°97	9	— 1°254
September 5 to September 29	September 18	— 0°12	14	— 1°38	13	— 0°553
October 1 to October 27	October 16	— 0°10	14	— 1°76	13	— 1°082
October 29 to December 3	November 17	— 0°15	12	— 1°05	12	— 0°503
December 5 to December 28	December 16	— 0°13	10	— 0°65	11	— 0°571

Equations formed by assuming the Error in Ecliptic Polar Distance to be represented by the Formula,
 $x \times \cos \text{Sun's longitude} + y \times \sin \text{Sun's longitude} + z$,
 and altering the number of observations so as to make the assumed weights of opposite parts of the year equal :

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} - 0.488 = + 0.5028 x - 0.8644 y + z \\ - 0.174 = + 0.8245 x - 0.5659 y + z \\ - 0.168 = + 0.9768 x - 0.2142 y + z \end{array} \right. & \begin{array}{l} \text{Weight } 8 \\ ,, \quad 11 \\ ,, \quad 10 \end{array} \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} + 0.155 = + 0.9438 x + 0.3305 y + z \\ - 0.365 = + 0.5563 x + 0.8310 y + z \\ - 0.482 = + 0.0715 x + 0.9974 y + z \end{array} \right. & \begin{array}{l} ,, \quad 16 \\ ,, \quad 11 \\ ,, \quad 10 \end{array} \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 0.485 = - 0.4746 x + 0.8802 y + z \\ - 1.254 = - 0.8901 x + 0.4558 y + z \\ - 0.553 = - 0.9965 x + 0.0834 y + z \end{array} \right. & \begin{array}{l} ,, \quad 8 \\ ,, \quad 9 \\ ,, \quad 12 \end{array} \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 1.082 = - 0.9219 x - 0.3875 y + z \\ - 0.503 = - 0.5757 x - 0.8176 y + z \\ - 0.571 = - 0.0999 x - 0.9950 y + z \end{array} \right. & \begin{array}{l} ,, \quad 13 \\ ,, \quad 12 \\ ,, \quad 12 \end{array}
 \end{array}$$

Solution of Equations for the Investigation of the Position of the Ecliptic, 1854.

Equations multiplied by the Weights.

$$\begin{array}{lcl}
 \text{Spring} \dots\dots\dots & \left\{ \begin{array}{l} - 3.904 = + 4.0224 x - 6.9152 y + 8 z \\ - 1.914 = + 9.0695 x - 6.2249 y + 11 z \\ - 1.680 = + 9.7680 x - 2.1420 y + 10 z \end{array} \right. \\
 \text{Summer} \dots\dots\dots & \left\{ \begin{array}{l} + 2.480 = + 15.1008 x + 5.2880 y + 16 z \\ - 4.015 = + 6.1193 x + 9.1410 y + 11 z \\ - 4.820 = + 0.7150 x + 9.9740 y + 10 z \end{array} \right. \\
 \text{Autumn} \dots\dots\dots & \left\{ \begin{array}{l} - 3.880 = - 3.7968 x + 7.0416 y + 8 z \\ - 11.286 = - 8.0109 x + 4.1022 y + 9 z \\ - 6.636 = - 11.9580 x + 1.0008 y + 12 z \end{array} \right. \\
 \text{Winter} \dots\dots\dots & \left\{ \begin{array}{l} - 14.066 = - 11.9847 x - 5.0375 y + 13 z \\ - 6.036 = - 6.9084 x - 9.8112 y + 12 z \\ - 6.852 = - 1.1988 x - 11.9400 y + 12 z \end{array} \right.
 \end{array}$$

New Equations formed by adding and subtracting those above, as indicated below :

$$\begin{array}{l}
 \text{Spring} + \text{Summer} + \text{Autumn} + \text{Winter} \\
 -62.609 = + 0.9374 x - 5.5232 y + 132 z \\
 \text{Spring} + \text{Summer} - \text{Autumn} - \text{Winter} \\
 +34.903 = + 88.6526 x + 23.7650 y \\
 \text{Spring} - \text{Summer} - \text{Autumn} + \text{Winter} \\
 -6.295 = + 4.5986 x - 78.6184 y
 \end{array}$$

Solution of these Equations :

$$\begin{array}{l}
 x = + 0.366 \\
 y = + 0.102 \\
 z = - 0.475
 \end{array}$$

The first term indicates that, at the first point of Aries, the error of the tabular Ecliptic N. P. D. is positive, or the assumed Ecliptic is south of the Sun's true path, by $0''.366$; and therefore that the right ascensions of all stars ought to be increased by $\frac{0''.366}{15 \times \sin 23^\circ.28'} = 0''.061$.

The second term indicates that the obliquity assumed in the Nautical Almanac ought to be increased by $0''.102$.

The third term indicates that the obliquity deduced from the southern solstice is greater than that deduced from the northern solstice by $0''.950$.

MEAN ERRORS of the TABULAR GEOCENTRIC PLACES of the SUN and PLANETS.

THE SUN.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1854.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 13 to Jan. 26	6	6	January 20	— 0°12	— 0°13	— 1°62	— 0°49
Feb. 2 to Feb. 25	10	10	February 14	— 0°15	+ 0°60	— 2°27	— 0°17
Feb. 27 to March 17	9	9	March 8	— 0°24	+ 1°34	— 3°83	— 0°17
March 27 to April 20	18	16	April 9	— 0°25	+ 1°69	— 4°08	+ 0°16
May 1 to May 25	12	10	May 17	— 0°31	+ 0°68	— 4°43	— 0°37
May 30 to July 3	10	9	June 17	— 0°26	— 0°37	— 3°56	— 0°48
July 11 to Aug. 2	10	10	July 21	— 0°13	— 0°87	— 1°97	— 0°49
Aug. 11 to Sept. 3	11	9	August 26	— 0°11	— 1°97	— 2°23	— 1°25
Sept. 5 to Sept. 29	14	13	September 18	— 0°12	— 1°38	— 2°20	— 0°55
Oct. 1 to Oct. 27	14	13	October 16	— 0°10	— 1°76	— 2°03	— 1°08
Oct. 29 to Dec. 3	12	12	November 17	— 0°15	— 1°05	— 2°32	— 0°50
Dec. 5 to Dec. 28	10	11	December 16	— 0°13	— 0°65	— 1°82	— 0°57

MERCURY.

Feb. 21 to March 3	2	2	February 26	+ 0°07	— 4°13	+ 2°59	— 3°38
May 16 to May 19	3	3	May 19	+ 0°22	— 3°11	+ 3°93	— 2°08
Aug. 24 to Aug. 29	2	3	August 28	+ 0°44	— 3°34	+ 4°94	— 5°21
September 27	1	1	September 27	— 0°03	+ 1°51	+ 0°17	+ 1°57
October 28	1	1	October 28	— 0°34	+ 6°25	— 3°19	+ 7°15
Dec. 11 to Dec. 27	3	3	December 18	— 0°17	— 0°85	— 2°49	— 0°47

VENUS.

Jan. 13 to Jan. 26	6	6	January 20	— 0°32	— 2°58	— 3°44	— 4°21
Feb. 2 to Feb. 4	3	3	February 3	— 0°28	— 1°46	— 3°32	— 2°98
Feb. 14 to March 2	5	5	February 20	— 0°25	— 2°48	— 2°55	— 3°73
April 3 to April 20	6	6	April 12	— 0°07	+ 1°60	— 1°58	+ 1°09
May 3 to May 31	5	5	May 19	— 0°09	— 1°96	— 0°48	— 2°33
June 29 to July 28	8	7	July 21	+ 0°40	— 3°26	+ 5°74	— 2°94
Aug. 10 to Aug. 30	9	9	August 24	+ 0°20	— 0°77	+ 2°58	— 1°41
Sept. 1 to Sept. 27	11	11	September 16	— 0°05	— 0°65	— 0°92	— 0°35
Oct. 9 to Oct. 31	8	8	October 22	— 0°38	— 3°12	— 6°44	— 0°70
Nov. 5 to Nov. 30	6	6	November 19	— 0°45	— 2°83	— 6°96	— 1°04

MARS.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1854.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
Jan. 24 to Feb. 18	6	6	February 7	— 1'50	— 17'68	— 27'39	— 7'64
Feb. 23 to March 3	6	6	February 28	— 1'90	— 15'59	— 31'71	— 3'95
March 10 to March 31	14	13	March 21	— 1'74	— 9'94	— 27'18	— 0'26
April 1 to April 13	10	10	April 7	— 1'54	— 7'19	— 23'48	+ 1'06
April 17 to May 6	8	8	April 25	— 1'29	— 3'86	— 18'94	+ 3'03

VESTA.

Jan. 24 to Feb. 13	5	5	February 5	+ 3'64	+ 25'99	+ 59'20	+ 3'46
Feb. 18 to March 3	8	8	February 27	+ 4'08	+ 23'10	+ 63'25	— 0'69
March 10 to March 31	14	14	March 21	+ 3'93	+ 16'95	+ 58'24	— 4'32
April 1 to April 24	14	14	April 10	+ 3'50	+ 12'09	+ 50'66	— 6'38

JUNO.

Feb. 9 to March 3	8	8	February 25	— 0'20	— 1'81	— 3'47	— 0'47
March 11 to April 1	9	9	March 25	— 0'17	+ 0'40	— 2'19	+ 1'37
April 3 to April 24	11	11	April 11	— 0'16	— 1'52	— 2'78	— 0'47

CERES.

July 20 to July 28	2	2	July 25	+ 18'57	— 64'03	+ 258'21	+ 13'91
Aug. 22 to Sept. 11	6	6	September 3	+ 17'98	— 36'51	+ 237'93	+ 26'08
Sept. 27 to Oct. 12	2	2	October 5	+ 15'08	— 30'60	+ 200'59	+ 20'74

PALLAS.

July 6 to Aug. 1	7	7	July 23	+ 0'90	— 4'00	+ 17'65	— 1'88
Aug. 12 to Sept. 2	8	8	August 25	+ 0'79	— 7'41	+ 15'32	— 6'06
Sept. 4 to Sept. 28	7	7	September 14	+ 0'67	— 6'49	+ 12'54	— 5'44

JUPITER.

Extent of Group.	Number of Obs. of R. A.	Number of Obs. of N. P. D.	Mean Day, 1854.	Mean Error in R. A.	Mean Error in N. P. D.	Error in Longitude.	Error in E. P. D.
May 18 to May 24	3	3	May 21	+ 0.67	+ 3.21	+ 8.58	+ 4.99
June 17 to June 20	2	3	June 20	+ 0.58	+ 1.31	+ 7.72	+ 2.80
July 6 to Aug. 1	10	10	July 21	+ 0.61	+ 2.20	+ 8.02	+ 3.53
Aug. 8 to Aug. 25	8	7	August 16	+ 0.50	+ 1.62	+ 6.64	+ 2.58
Aug. 30 to Sept. 12	12	12	September 5	+ 0.41	+ 1.05	+ 5.49	+ 1.79
Sept. 18 to Oct. 4	12	11	September 26	+ 0.32	+ 1.56	+ 4.19	+ 2.14
Oct. 11 to Nov. 11	8	8	October 29	+ 0.31	+ 0.78	+ 4.13	+ 1.43

SATURN.

Jan. 2 to Jan. 26	5	5	January 17	— 0.18	— 9.27	— 0.28	— 9.62
Jan. 28 to Feb. 18	6	6	February 5	— 0.25	— 8.57	— 1.42	— 9.18
Sept. 17 to Sept. 27	5	5	September 23	+ 0.16	— 7.55	+ 3.02	— 7.28
Oct. 2 to Oct. 31	9	9	October 22	+ 0.26	— 7.59	+ 4.44	— 7.15
Nov. 6 to Nov. 27	9	9	November 18	+ 0.26	— 6.90	+ 4.45	— 6.41
Dec. 2 to Dec. 30	11	11	December 16	+ 0.28	— 7.51	+ 4.91	— 6.91

URANUS.

Jan. 2 to Jan. 23	4	4	January 13	+ 12.02	— 59.65	+ 184.72	— 0.60
Sept. 10 to Sept. 28	6	6	September 21	+ 13.12	— 56.03	+ 196.82	+ 0.38
Oct. 12 to Oct. 31	7	7	October 26	+ 13.24	— 58.00	+ 199.52	+ 0.43
Nov. 3 to Nov. 23	5	5	November 12	+ 13.22	— 58.24	+ 199.35	+ 0.57
Dec. 1 to Dec. 30	7	7	December 14	+ 12.93	— 58.64	+ 195.88	+ 0.30

NEPTUNE.

Aug. 17 to Sept. 6	13	13	August 30	+ 0.42	— 3.60	+ 7.16	— 0.91
Sept. 11 to Oct. 2	11	11	September 24	+ 0.37	— 3.94	+ 6.61	— 1.51
Oct. 11 to Nov. 9	6	8	October 27	+ 0.31	— 3.68	+ 5.68	— 1.62
Nov. 29 to Dec. 12	4	4	December 5	+ 0.30	— 4.36	+ 5.81	— 2.31

ERRORS of the TABULAR HELIOCENTRIC PLACES of the PLANETS.

MERCURY.

Day, 1854.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). ($\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.)						Error of Tables in Hel. E. P. D.
February 26	"	+	2.59	=	+	0.166 δL + 142960 $\delta \rho$ + 0.834 δl - 45352 δr	- 12.34
May 19	"	+	3.93	=	+	0.218 - 94274 + 0.782 - 31466	- 7.77
August 28	"	+	4.94	=	+	0.163 - 138490 + 0.837 + 42326	- 19.73
September 27	"	+	0.17	=	+	0.290 + 66375 + 0.710 - 29659	+ 4.85
October 28	"	-	3.19	=	+	0.112 + 193560 + 0.888 - 80527	+ 17.57
December 18	"	-	2.49	=	+	0.242 - 118600 + 0.758 + 51051	- 1.37

VENUS.

January 20	- 3.44 = - 0.682 δL + 428730 $\delta \rho$ + 1.681 δl - 312890 δr	- 2.56
February 3	- 3.32 = - 1.363 + 437480 + 2.358 - 318040	- 1.46
February 20	- 2.55 = - 2.411 + 218223 + 3.398 - 157689	- 1.47
April 12	- 1.58 = - 0.535 - 398950 + 1.534 + 287880	+ 0.73
May 19	- 0.48 = + 0.086 - 265500 + 0.914 + 190810	- 2.48
July 21	+ 5.74 = + 0.335 - 136190 + 0.665 + 96982	- 5.04
August 24	+ 2.57 = + 0.378 - 93910 + 0.622 + 66895	- 2.82
September 16	- 0.92 = + 0.396 - 70282 + 0.604 + 50211	- 0.75
October 22	- 6.44 = + 0.414 - 38399 + 0.586 + 27735	- 1.61
November 19	- 6.96 = + 0.422 - 16861 + 0.578 + 12339	- 2.44

MARS.

February 7	- 27.39 = + 2.222 δL - 74608 $\delta \rho$ - 1.224 δl + 126050 δr	- 3.32
February 28	- 31.71 = + 2.465 + 7197 - 1.467 - 12171	- 1.60
March 21	- 27.18 = + 2.190 + 86314 - 1.192 - 143880	- 0.11
April 7	- 23.48 = + 1.800 + 116065 - 0.801 - 191590	+ 0.52
April 25	- 18.94 = + 1.444 + 121430 - 0.444 - 198280	+ 1.74

VESTA.

Day, 1854.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). ($\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.)	Error of Tables in Hel. E. P. D.
February 5	$+ 59.20 = + 1.632 \delta L - 23714 \delta \rho$	$+ 1.22 - 5354 \delta \rho$
February 27	$+ 63.25 = + 1.727 + 4723$	$- 0.21 - 6329$
March 21	$+ 58.24 = + 1.602 + 32748$	$- 1.26 - 6422$
April 10	$+ 50.66 = + 1.391 + 46005$	$- 2.28 - 5798$

JUNO.

February 25	$- 3.47 = + 1.514 \delta L - 12632 \delta \rho$	$- 0.31 + 369 \delta \rho$
March 25	$- 2.19 = + 1.509 + 10680$	$+ 0.90 - 457$
April 11	$- 2.81 = + 1.400 + 20748$	$- 0.37 - 815$

CERES.

July 25	$+ 258.21 = + 1.515 \delta L - 6624 \delta \rho$	$+ 11.60 + 5009 \delta \rho$
September 3	$+ 237.51 = + 1.396 + 19984$	$+ 12.57 + 4796$
October 5	$+ 200.59 = + 1.155 + 26826$	$+ 6.61 + 3171$

PALLAS.

July 23	$+ 17.65 = + 1.518 \delta L + 4752 \delta \rho$	$- 1.30 - 15802 \delta \rho$
August 25	$+ 15.32 = + 1.319 + 22335$	$- 3.74 - 11556$
September 14	$+ 12.54 = + 1.166 + 24996$	$- 3.29 - 7898$

JUPITER.

May 21	$+ 8.58 = + 1.120 \delta L - 7486 \delta \rho - 0.120 \delta l + 38217 \delta r$	$+ 4.39$
June 20	$+ 7.72 = + 1.215 - 4339 - 0.215 + 22032$	$+ 2.30$
July 21	$+ 8.02 = + 1.244 + 1104 - 0.244 - 5623$	$+ 2.84$
August 16	$+ 6.64 = + 1.196 + 5335 - 0.196 - 27208$	$+ 2.14$
September 5	$+ 5.49 = + 1.130 + 7391 - 0.130 - 37616$	$+ 1.56$
September 26	$+ 4.19 = + 1.054 + 8166 - 0.054 - 41794$	$+ 1.99$
October 29	$+ 4.13 = + 0.952 + 7343 + 0.048 - 37811$	$+ 1.48$

SATURN.

Day, 1854.	Error of Tables of the Planet in Geocentric Longitude, expressed in terms of Error of Heliocentric Longitude of Planet (δL), of Error of Projection of Radius Vector of Planet ($\delta \rho$), of Error of Earth's Longitude (δl), and of Error of Earth's Radius Vector (δr). ($\delta \rho$ and δr are expressed in terms of the Earth's mean Distance from the Sun.)						Error of Tables in Hel. E. P. D.
	"						"
January 17	—	0.28	=	+	1.054	δL + 2299 $\delta \rho$ — 0.054 δl — 21276 δr	— 9.09
February 5	—	1.42	=	+	1.017	+ 2491 — 0.017 — 22990	— 8.98
September 23	+	3.02	=	+	1.028	— 2528 — 0.028 + 22866	— 7.04
October 22	+	4.44	=	+	1.082	— 1972 — 0.082 + 17991	— 6.59
November 18	+	4.45	=	+	1.116	— 860 — 0.116 + 7808	— 5.74
December 16	+	4.91	=	+	1.119	+ 617 — 0.119 — 5677	— 6.18

URANUS.

January 13	+	184.72	=	+	1.014	δL + 507 $\delta \rho$ — 0.014 δl — 10230 δr	— 0.59
September 21	+	196.82	=	+	1.035	— 411 — 0.035 + 8098	+ 0.37
October 26	+	199.52	=	+	1.052	— 119 — 0.052 + 2376	+ 0.41
November 12	+	199.35	=	+	1.053	+ 48 — 0.053 — 1020	+ 0.54
December 14	+	195.88	=	+	1.041	+ 343 — 0.041 — 6860	+ 0.29

NEPTUNE.

August 30	+	7.16	=	+	1.034	δL — 39 $\delta \rho$ — 0.035 δl + 994 δr	— 0.88
September 24	+	6.61	=	+	1.033	+ 62 — 0.033 — 2082	— 1.46
October 27	+	5.68	=	+	1.021	+ 174 — 0.022 — 5425	— 1.59
December 5	+	5.81	=	+	1.000	+ 221 0.000 — 6895	— 2.31

ERRORS of the MOON'S TABULAR PLACE in LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE, 1854.

Day, 1854.		Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1854.		Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.					
		In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.				In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.						
		"	"		"	"				"	"		"	"						
Jan.	1				+	7.62	+	4.81	JH	Jan.	14		+	2.57	—	6.41	JH			
	5	+	4.90	—	0.34	C					15		+	3.37	—	4.34	H			
	6							+	6.85	—	0.29	JH		+	8.28	—	4.89	E		
	7							+	11.18	—	2.89	H		+	7.68	—	5.87	JH		
	8	+	7.78	—	8.21	JH		+	13.68	—	6.39	E		—	0.38	—	2.78	H		
	13							—	1.24	—	5.66	D		+	9.36	—	1.66	H		
											20		+			+	7.15	—	1.58	E

ERRORS of the MOON'S TABULAR PLACE—continued.

Day, 1854.	Errors from Observation with Transit Circle.			Observer.	Errors from Observation with Altazimuth.			Observer.	Day, 1854.	Errors from Observation with Transit Circle.			Observer.	Errors from Observation with Altazimuth.			Observer.
	In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.				In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		
Jan. 21	+ 6.57	— 0.49	E		+ 4.29	— 1.20	D		April 17	+ 15.14	+ 8.13	H		+ 12.74	+ 9.92	JH	
22	+ 8.18	— 0.28	D		+ 8.06	+ 1.18	JH		18	+ 17.91	+ 10.18	JH		+ 13.83	+ 4.46	E	
23					— 2.81	+ 0.35	H		19					+ 9.83	+ 2.54	D	
24					— 9.76	+ 1.90	E		20					+ 15.07	+ 7.47	H	
30					+ 7.71	+ 15.46	H		May 2					+ 6.19	— 2.98	E	
Feb. 2	+ 4.95	+ 1.39	JH		+ 6.78	+ 4.01	E		3					+ 3.72	— 1.54	H	
3	+ 6.68	— 1.78	D		+ 7.35	+ 4.08	H		4	+ 1.36	— 5.57	E		+ 3.83	— 3.31	D	
7	+ 5.04	— 6.77	JH		+ 9.43	— 10.85	D		5	+ 1.65	— 6.60	H		+ 6.58	— 3.08	T	
8					+ 3.13	— 8.66	H		6	+ 0.86	— 5.34	D		+ 4.70	— 5.85	E	
9	+ 1.39	— 6.97	D		+ 4.52	— 10.72	JH		7	— 3.82	— 4.03	T		+ 9.21	— 6.32	H	
10					— 1.48	— 9.87	E		8	+ 2.04	— 2.82	E		+ 0.31	— 4.16	FT	
11	— 0.07	— 5.28	JH		— 2.30	— 8.42	D		9					— 10.99	— 2.11	FT	
12	— 0.61	— 4.70	E		— 0.92	— 5.74	H		10	+ 5.52	— 3.06	D		+ 3.10	— 1.90	E	
13	+ 2.49	— 2.04	D		— 3.15	— 5.95	JH		11	+ 5.73	+ 0.20	T		+ 9.07	— 4.70	H	
14					+ 1.97	— 1.80	E		12	+ 13.12	+ 1.84	E		+ 10.52	— 1.92	D	
15					+ 1.28	— 2.33	D		13					+ 16.70	+ 0.68	T	
16					+ 7.59	+ 5.39	H		15	+ 18.55	+ 4.00	E		+ 21.66	— 3.24	T	
17	+ 11.93	— 0.72	C		+ 3.27	— 4.39	JH		16					+ 10.27	+ 1.49	D	
18	+ 12.42	+ 1.29	JH		+ 11.72	+ 4.65	FT		18	+ 12.52	+ 5.50	FT		+ 10.50	+ 2.21	E	
20					+ 7.48	+ 1.57	H		19	+ 6.78	— 2.44	E					
21					+ 5.69	+ 4.21	JH		30					+ 10.48	+ 0.14	M	
22					— 4.14	+ 5.18	D		31					+ 4.45	+ 2.40	E	
Mar. 1					+ 1.87	+ 4.47	T		June 1	+ 4.56	0.00	FT					
2	+ 3.30	+ 5.89	HB		+ 4.26	+ 3.87	D		3	+ 2.38	+ 0.76	H					
3	+ 6.78	+ 0.14	FT		+ 7.35	+ 2.51	E		4					+ 4.03	+ 1.41	E	
4					+ 7.70	+ 4.99	JH		8	+ 5.01	+ 3.41	D		+ 7.74	+ 4.48	E	
5	+ 5.36	— 4.02	E		+ 13.08	— 1.94	H		9					+ 10.62	+ 3.70	H	
6	+ 5.66	— 4.91	C		+ 6.43	— 6.40	D		10	+ 11.22	+ 3.72	E		+ 12.83	+ 2.36	D	
8					+ 9.59	— 5.92	M		12	+ 18.53	+ 7.44	FT		+ 17.54	+ 1.70	E	
9	— 0.64	— 7.08	H		+ 3.96	— 6.87	E		13					+ 16.83	+ 2.33	T	
10	— 2.98	— 6.09	FT		— 3.15	— 6.37	D		17	+ 4.75	— 4.53	E		+ 6.25	— 6.46	H	
11	— 3.41	— 3.55	E		— 2.95	— 5.93	H		18					+ 6.33	— 5.04	M	
12	— 3.60	— 5.27	JH		— 3.75	— 9.88	D		20					— 2.51	— 9.73	Y	
13	— 2.60	— 4.98	H		— 1.25	— 6.80	E		28					+ 15.30	— 1.64	H	
14					+ 1.33	— 4.81	JH		29					+ 10.54	+ 5.04	E	
15					+ 7.17	— 1.23	H		July 3					+ 12.17	+ 5.40	E	
16	+ 8.60	+ 2.35	JH		+ 6.08	+ 0.31	D		6	+ 9.74	+ 6.02	D		+ 10.86	+ 6.92	T	
17	+ 12.54	+ 5.75	H		+ 10.68	+ 1.76	E		12	+ 21.60	+ 2.73	FT					
19	+ 14.74	+ 8.73	E		+ 5.98	+ 7.25	H		13	+ 13.74	+ 4.02	E		+ 9.31	+ 5.32	T	
21					+ 11.45	+ 10.13	M		14					+ 14.39	— 7.90	FT	
30					+ 7.29	+ 1.47	JH		17	+ 6.35	— 2.91	D		+ 7.53	— 3.56	T	
31					+ 8.16	— 0.17	H		18	+ 2.24	— 6.85	T		+ 5.83	— 9.74	E	
April 1	+ 4.19	— 3.02	JH		+ 8.50	+ 2.06	E		20					— 0.59	— 9.09	D	
3					+ 13.71	— 2.40	JH		21					+ 1.28	— 11.81	T	
4	+ 3.15	— 6.11	D		+ 11.10	— 4.83	H		22					+ 3.64	— 8.59	E	
5	+ 3.20	— 6.71	E		+ 6.18	— 3.68	M		28					+ 19.75	— 0.22	E	
6	+ 1.51	— 7.75	H		+ 4.07	— 7.17	D		29					+ 16.77	— 3.98	D	
7	+ 1.58	— 6.38	JH		+ 1.97	— 6.12	E		30					+ 16.77	+ 4.06	H	
8	— 1.21	— 5.80	D		+ 0.17	— 6.24	H		Aug. 1					+ 14.38	+ 3.55	E	
9	— 4.63	— 3.93	E		— 1.75	— 5.40	JH		6	+ 13.59	+ 8.42	T		+ 13.33	+ 4.02	D	
10	— 1.10	— 1.41	H		+ 0.42	— 5.01	D		7					+ 15.90	+ 7.49	H	
11	— 1.41	— 1.74	E		+ 0.59	— 5.83	M		8	+ 20.16	+ 5.86	D		+ 22.35	+ 7.99	T	
12					+ 0.79	— 1.23	H		10	+ 21.45	+ 4.24	T		+ 19.26	+ 2.81	D	
13	+ 8.74	+ 1.21	JH		+ 4.29	— 1.19	E		11	+ 17.11	+ 3.67	E		+ 17.84	+ 2.78	H	
14	+ 10.07	+ 4.86	H		+ 8.59	— 2.04	D		12	+ 16.05	+ 2.16	D		+ 17.54	— 0.48	T	
15	+ 14.59	+ 7.71	E		+ 14.93	+ 2.90	JH										

ERRORS of the MOON'S TABULAR PLACE—concluded.

Day, 1854.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.	Day, 1854.	Errors from Observation with Transit Circle.		Observer.	Errors from Observation with Altazimuth.		Observer.
	In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.			In Longitude.	In E. N. P. D.		In Longitude.	In E. N. P. D.	
	"	"		"	"			"	"		"	"	
Aug. 13	+12.33	— 0.04	T	+11.93	— 0.06	H	Oct. 12	— 2.43	— 1.74	L	— 5.89	— 7.97	H
14	+ 7.95	— 2.12	H	+ 9.62	— 5.24	E	16				+ 4.68	— 6.75	T
15				— 0.69	— 7.59	D	27				+10.27	+ 5.93	M
16				+ 6.56	— 6.40	T	28	+ 9.24	+ 2.16	FT	+ 7.10	+ 1.16	T
17				+ 3.41	— 6.69	H	29	+11.60	+ 1.48	H	+10.16	+ 1.74	H
18				+ 2.85	— 9.05	E	30	+15.67	+ 1.54	T	+12.75	— 0.64	E
21				+ 4.15	— 6.12	D	31	+12.78	— 0.06	D	+13.52	+ 1.95	H
28				+17.43	— 2.82	M							
29	+12.47	— 5.11	T	+17.79	— 0.27	M	Nov. 1				+14.53	— 2.84	T
30				+15.45	— 0.06	H	2	+11.11	— 4.08	H	+10.34	— 5.60	D
31				+12.68	+ 1.48	T	3	+13.22	— 3.25	T	+11.75	— 0.79	E
							4				+ 2.53	— 6.44	H
Sept. 1	+12.00	+ 2.68	D	+18.37	+ 2.69	M	5	+11.07	— 4.50	E	+ 9.91	— 6.74	E
2	+15.88	+ 0.84	T	+14.01	+ 3.12	H	6	+ 7.65	— 2.76	L	+ 8.49	— 6.61	T
3	+16.34	+ 0.88	D	+14.97	— 1.98	D	7				— 1.66	— 2.33	H
4	+21.57	+ 0.35	H	+16.04	— 2.46	T	8				+ 0.04	— 4.64	T
5	+23.97	+ 1.82	D	+25.65	— 3.62	M	9	+ 1.45	+ 2.72	FT	— 4.65	— 1.75	H
6	+26.48	+ 3.62	FT	+24.18	— 5.61	H	11				+ 2.93	— 3.30	H
7				+21.25	— 4.80	D	12				— 0.11	+ 0.54	E
8				+26.29	— 1.99	FT	26				+ 3.63	— 2.63	D
9	+21.00	— 1.01	D	+20.47	— 7.07	E	27				+14.36	+ 3.35	M
10	+14.99	+ 1.25	E	+16.95	— 7.38	FT	29	+12.51	— 0.99	FT	+14.03	— 6.39	T
11	+12.20	— 0.42	D	+ 9.91	— 8.39	M	30				+11.69	+ 1.11	M
12				+ 8.63	—11.85	T							
13				+ 4.88	+ 2.07	E	Dec. 1	+ 4.85	— 3.89	T	+ 8.47	— 5.79	H
14				+ 1.42	— 8.51	D	2	+ 9.21	— 4.06	FT	+ 5.54	— 5.39	D
16				+15.35	—12.43	FT	3	+ 4.18	— 5.72	H	+ 7.67	— 6.92	H
17				+10.74	— 8.41	E	4				+ 8.83	— 7.87	M
19				+16.86	—10.63	M	5	+ 6.71	— 1.86	H	+10.90	— 6.63	D
20				+32.99	—36.19	D	6	+ 9.86	— 1.05	FT	+ 0.60	— 4.83	L
26				+14.86	— 2.06	D	7	+ 6.44	+ 0.51	D	+ 6.18	— 2.27	M
27				+14.78	— 2.36	H	8	+ 5.21	+ 3.87	T	+ 4.50	— 2.89	H
28	+ 1.58	— 4.19	L	+10.68	— 3.21	T	9	+ 1.28	+ 0.67	FT	— 0.93	— 1.49	AL
29	+ 3.65	— 0.17	Y	+ 9.42	— 1.85	L	10	+ 0.76	+ 2.72	D	— 3.90	— 2.59	H
30	+ 8.41	+ 0.72	T	+13.00	— 0.77	FT	11	+ 3.07	+ 1.16	H	+ 2.35	+ 1.73	E
							12	+ 6.04	+ 2.59	E	+ 7.17	— 2.65	T
Oct. 1	+11.16	— 0.66	H	+10.96	— 2.67	H	14	+ 9.85	+ 0.11	FT	+ 4.21	— 0.34	L
2	+15.02	+ 0.90	T	+16.00	— 2.15	M	15				+ 6.57	— 1.22	D
3	+16.33	— 0.73	Y	+19.38	— 2.50	H	25	+ 9.98	— 2.70	E	+12.79	— 0.90	E
4	+16.92	+ 1.61	T	+20.79	— 7.32	M	26	+10.76	— 3.67	D	+15.43	— 3.47	M
5				+25.12	— 4.64	H	27	+ 8.85	— 4.77	E	+11.92	— 3.85	AL
7	+16.00	— 6.27	Y	+15.82	— 3.44	M	28	+ 8.38	— 5.15	T	+ 7.59	— 8.33	D
8	+15.33	— 5.27	H	+20.29	— 4.63	FT	29	+ 2.72	— 7.75	E	+ 3.22	— 6.88	Y
9	+10.63	— 6.99	T	+ 2.62	— 1.47	L	30	+ 2.84	— 7.87	D	+ 7.81	—12.13	T
10				+ 3.25	—10.05	M	31	— 2.45	— 5.63	E	+ 0.44	— 4.90	E
11	+ 3.02	— 3.64	FT	+ 1.26	— 7.54	T							

ROYAL OBSERVATORY, GREENWICH.

OBSERVATIONS OF γ DRACONIS

WITH THE

REFLEX ZENITH TUBE;

AND

REDUCTION OF THE OBSERVATIONS.

1854.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and REDUCTION of the OBSERVATIONS, 1854.

Day and Hour of Observation, 1854.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equi- valent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	Assumed In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1854, Jan. 1.	Mean Zenith Distance North, 1854, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"	"	"
Jan. ^{d h} 24. 22	H	Left	16	41'486	41'290	26'8	90'2	0'76	+ 265'71	170'96	94'75	+ 14'99	109'74
" "		Right	15	43'142	41'290	12'8	76'0	0'57	- 74'93		96'03		111'02
Jan. 25. 22	E	Right	15	41'668	42'850	14'2	76'7	0'59	- 76'40		94'56	+ 15'29	109'85
Feb. 13. 20	HB	Right	15	43'995	40'828	12'2	77'5	0'58	- 81'51		89'45	+ 20'29	109'74
Feb. 24. 20	E	Left	16	40'826	41'517	27'0	89'4	0'75	+ 258'42		87'46	+ 22'29	109'75
March 14. 18	E	Left	16	40'850	41'532	24'0	87'0	0'72	+ 259'04		88'08		112'11
" "		Right	15	43'308	41'532	13'2	75'5	0'57	- 81'78		89'18	+ 24'03	113'21
March 28. 18	E	Right	15	43'538	41'531	15'0	76'5	0'59	- 85'65		85'31	+ 23'95	109'26
April 19. 16	D	Left	16	43'475	38'959	25'2	86'0	0'72	+ 259'92		88'96		110'37
" "		Right	15	45'820	38'959	15'2	76'0	0'59	- 80'79		90'17	+ 21'41	111'58
April 23. 16	E	Right	15	45'492	39'325	18'5	81'3	0'64	- 81'47		89'49	+ 20'65	110'14
" "		Left	16	45'492	36'997	19'5	82'8	0'66	+ 260'78		89'82		110'47
May 8. 15	E	Left	16	45'430	37'236	14'5	76'0	0'58	+ 263'68		92'72		109'79
" "		Right	15	47'433	37'236	25'2	85'4	0'71	- 79'06		91'90	+ 17'07	108'97
May 16. 14	E	Right	15	47'140	37'366	21'5	84'5	0'69	- 76'30		94'66	+ 14'89	109'55
" "		Left	16	47'140	35'798	14'5	76'8	0'59	+ 268'24		97'28		112'17
May 19. 14	FT	Left	16	46'542	36'353	14'8	76'0	0'59	+ 267'52		96'56	+ 14'05	110'61
" "		Right	15	48'171	36'353	25'2	86'5	0'72	- 76'64		94'32		108'37
May 26. 14	FT	Left	16	48'120	34'886	13'5	73'5	0'56	+ 269'36		98'40	+ 11'99	110'39
" "		Right	15	49'350	34'886	25'0	85'3	0'72	- 71'80		99'16		111'15
May 27. 14	FT	Left	16	48'030	35'007	14'0	73'2	0'56	+ 269'88		98'92	+ 11'69	110'61
" "		Right	15	49'335	35'007	25'5	86'0	0'72	- 73'57		97'39		109'08
May 29. 13	FT	Left	16	47'150	35'531	13'0	72'5	0'55	+ 263'90		92'94	+ 11'09	104'03
" "		Right	15	48'750	35'531	25'6	86'0	0'72	- 72'56		98'40		109'49
May 30. 13	FT	Left	16	48'000	34'985	13'5	73'0	0'56	+ 269'00		98'04	+ 10'79	108'83
" "		Right	15	49'190	34'985	27'6	87'2	0'74	- 70'80		100'16		110'95
May 31. 13	FT	Left	16	49'190	33'880	15'0	74'0	0'58	+ 270'46		99'50	+ 10'49	109'99
" "		Right	15	50'340	33'880	25'5	84'5	0'71	- 71'52		99'44		109'93
June 3. 13	FT	Left	16	49'000	34'195	12'5	73'0	0'55	+ 272'52		101'56	+ 9'53	111'09
" "		Right	15	49'974	34'195	26'0	87'0	0'73	- 70'69		100'27		109'80

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 38'' \cdot 36$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

January 24. The second observation is very uncertain.

January 25. Very faint; the star was not seen after reversion.

February 13. The star was not seen after reversion.

February 24. The star was extremely faint and barely visible. The reading of A was set down 41'826.

March 14. The star very tremulous.

March 28. Cloudy; extremely faint; the star was not seen after reversion.

April 19. The reading of A in the first observation was set down 41'475.

April 23. The reading of B in the first observation was set down 40'325.

May 26. The observation good.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1854—continued.

Day and Hour of Observation, 1854.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equiv- alent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	Assumed In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1854, Jan. 1.	Mean Zenith Distance North, 1854, Jan. 1.	
				A	B									
				r	r	div.	div.	"	"	"	"	"	"	
June ^{d h} 10. 13	E	Right	15	49.808	34.261	27.2	86.3	0.73	— 69.01	170.96	101.95	+ 7.29	109.24	
” ”		Left	16	49.808	33.537	13.3	72.4	0.55	+ 275.03		104.07		111.36	
June 12. 13	D	Left	16	48.805	34.515	13.3	72.0	0.55	+ 274.62		103.66		+ 6.65	110.31
” ”		Right	15	49.540	34.515	26.8	86.2	0.73	— 68.77		102.19			108.84
June 17. 12	D	Left	16	49.472	33.944	12.0	71.0	0.54	+ 276.22		105.26		+ 5.05	110.31
” ”		Right	15	50.069	33.944	27.0	86.2	0.73	— 68.07		102.89			107.94
June 20. 11	D	Right	15	49.989	33.948	27.2	86.0	0.73	— 66.78	254.87	104.18	+ 4.09	108.27	
” ”		Left	16	49.989	33.174	12.8	72.0	0.55	+ 271.99		101.03		105.12	
June 28. 11	FT	Left	16	49.920	33.775	13.0	70.5	0.54	+ 280.90		109.94		+ 1.61	111.55
” ”		Right	15	49.912	33.775	29.5	86.5	0.75	— 62.62		108.34			109.95
June 29. 11	T	Left	16	49.838	33.842	10.0	68.0	0.50	+ 280.61		109.65		+ 1.30	110.95
” ”		Right	15	49.849	33.842	31.8	89.7	0.79	— 62.72		108.24			109.54
July 12. 11	FT	Left	16	49.800	29.059	7.0	65.5	0.46	+ 366.83	254.87	111.96	— 2.57	109.39	
July 18. 10	FT	Left	16	49.800	29.135	10.0	66.8	0.50	+ 368.14		113.27		— 4.25	109.02
” ”		Right	15	49.270	29.135	31.0	87.3	0.76	— 141.79		113.08			108.83
July 19. 10	T	Left	16	49.025	29.961	10.0	66.0	0.49	+ 368.99		114.12		— 4.53	109.59
” ”		Right	15	48.334	29.961	31.8	88.0	0.77	— 139.96		114.91			110.38
July 20. 10	E	Right	15	48.332	29.962	32.8	88.5	0.78	— 139.96		114.91		— 4.81	110.10
” ”		Left	16	48.332	30.675	10.0	65.5	0.49	+ 369.35		114.48			109.67
July 21. 10	FT	Left	16	48.350	30.687	12.0	62.4	0.48	+ 369.83		114.96		— 5.06	109.90
” ”		Right	15	47.460	30.687	31.8	86.8	0.77	— 137.48		117.39			112.33
July 22. 10	D	Right	15	47.514	30.792	33.0	88.5	0.79	— 140.16		114.71		— 5.31	109.40
” ”		Left	16	47.514	31.572	10.5	66.0	0.49	+ 370.67		115.80			110.49
July 24. 10	T	Right	15	46.583	31.600	34.0	88.6	0.79	— 138.10		116.77		— 5.81	110.96
” ”		Left	16	46.583	32.711	9.6	64.0	0.48	+ 374.16	119.29	113.48			
July 25. 10	L	Left	16	46.583	32.606	12.0	66.0	0.49	+ 372.40	117.53	— 6.06	111.47		
July 28. 10	E	Right	15	45.577	32.606	36.0	91.8	0.83	— 138.14	116.73	— 6.81	109.92		
” ”		Left	16	45.577	33.602	6.2	62.4	0.44	+ 372.19	117.32		110.51		
July 29. 9	T	Left	16	45.575	33.467	5.8	62.1	0.44	+ 369.88	115.01	— 7.06	107.95		
” ”		Right	15	44.765	33.467	35.4	91.7	0.82	— 138.95	115.92		108.86		

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 80) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 38'' \cdot 36$, to July 1; and, after that time, = $w + (\text{sum of Micrometer Readings} - 70) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00636$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 37'' \cdot 72$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

June 20. The second bisection with Micrometer B is not good.

June 29. The star very tremulous; the observation not good.

July 1. The wires of the instrument were accidentally broken; they were replaced by Mr. Simms on July 6.

July 12. Cloudy; the second bisection with A could not be obtained.

July 18. The second bisection with A is not good.

July 19. The star extremely tremulous.

July 25. A second bisection of the star could not be made.

July 29. The reading of A at the second bisection has been diminished one revolution.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1854—*continued*.

Day and Hour of Observation, 1854.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equi- valent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	Assumed In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1854, Jan. 1.	Mean Zenith Distance North, 1854, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"		
August 1. 9 ^{d h}	H	Right	15	44.805	33.452	36.0	92.2	0.83	— 139.39	254.87	115.48	— 7.73	107.75
" " "		Left	16	44.805	34.308	4.5	60.7	0.42	+ 371.06		116.19		108.46
August 10. 9	T	Left	16	44.791	34.502	5.0	62.0	0.43	+ 374.09		119.22	— 9.58	109.64
" " "		Right	15	43.471	34.502	38.0	94.5	0.86	— 134.65		120.22		110.64
August 12. 9	E	Right	15	43.422	34.600	37.6	93.5	0.85	— 135.46		119.41	— 9.92	109.49
" " "		Left	16	43.422	35.877	4.6	60.7	0.43	+ 374.19		119.32		109.40
August 14. 8	T	Left	16	43.352	36.017	5.9	62.2	0.44	+ 375.37		120.50	— 10.26	110.24
" " "		Right	15	41.974	36.017	38.0	94.0	0.85	— 134.93		119.94		109.68
August 18. 8	T	Right	15	41.897	36.018	38.0	95.9	0.87	— 133.68		121.19	— 10.94	110.25
" " "		Left	16	41.897	37.549	1.9	60.0	0.40	+ 376.62		121.75		110.81
August 22. 8	T	Left	16	41.897	37.408	5.0	62.0	0.43	+ 374.28		119.41	— 11.50	107.91
" " "		Right	15	40.452	37.408	38.2	95.0	0.86	— 132.75		122.12		110.62
August 24. 8	L	Left	16	40.505	38.825	3.5	60.0	0.41	+ 374.68		119.81	— 11.76	108.05
August 26. 8	FT	Left	16	39.050	40.354	3.0	60.5	0.41	+ 375.93		121.06	— 12.02	109.04
August 28. 7	H	Left	16	42.050	37.462	7.5	62.0	0.45	+ 377.78		122.91	— 12.28	110.63
" " "		Right	15	40.390	37.462	37.2	92.0	0.84	— 132.59		122.28		110.00
August 29. 7	T	Right	15	36.925	40.870	38.0	93.0	0.85	— 131.65	123.22	— 12.41	110.81	
" " "		Left	16	36.925	42.581	4.5	60.0	0.42	+ 377.65	122.78		110.37	
August 30. 7	FT	Left	16	36.927	42.575	6.0	60.0	0.43	+ 377.59	122.72	— 12.49	110.23	
" " "		Right	15	35.170	42.575	38.0	92.5	0.84	— 130.80	124.07		111.58	
September 2. 7	T	Left	16	35.223	44.279	1.6	59.0	0.39	+ 377.55	122.68	— 12.73	109.95	
" " "		Right	15	33.506	44.279	39.0	96.2	0.87	— 131.50	123.37		110.64	
September 4. 7	H	Right	15	33.698	44.172	40.0	97.0	0.89	— 132.95	121.92	— 12.89	109.03	
" " "		Left	16	33.698	45.892	1.2	57.8	0.38	+ 379.02	124.15		111.26	
September 5. 7	D	Left	16	33.698	45.832	0.0	58.0	0.38	+ 378.01	123.14	— 12.97	110.17	
" " "		Right	15	32.012	45.832	41.0	97.5	0.90	— 132.52	122.35		109.38	
September 6. 7	FT	Left	16	32.012	47.553	1.5	59.0	0.39	+ 378.61	123.74	— 13.05	110.69	
" " "		Right	15	30.188	47.553	40.0	97.0	0.89	— 130.79	124.08		111.03	
September 8. 7	H	Right	15	30.192	47.618	38.2	96.3	0.87	— 131.92	122.95	— 13.21	109.74	
" " "		Left	16	30.192	49.320	3.3	60.7	0.41	+ 377.74	122.87		109.66	
September 9. 7	D	Left	16	30.018	49.512	15.0	74.0	0.58	+ 378.21	123.34	— 13.24	110.10	
" " "		Right	15	28.219	49.512	28.0	86.5	0.74	— 130.47	124.40		111.16	

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 70) \times 16''\cdot 780 + \text{sum of Level Readings} \times 0''\cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3'\cdot 37''\cdot 72$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

August 1. The image of the star unsteady in consequence of high wind which disturbed the mercury.

August 14. The reading of A at the first bisection has been diminished one revolution.

August 24. A second bisection of the star could not be made.

August 26. Too cloudy for the double observation.

August 28. The reading of A in the first observation has been increased one revolution.

September 4. Very tremulous after reversion. The reading of A in the second observation has been increased one revolution.

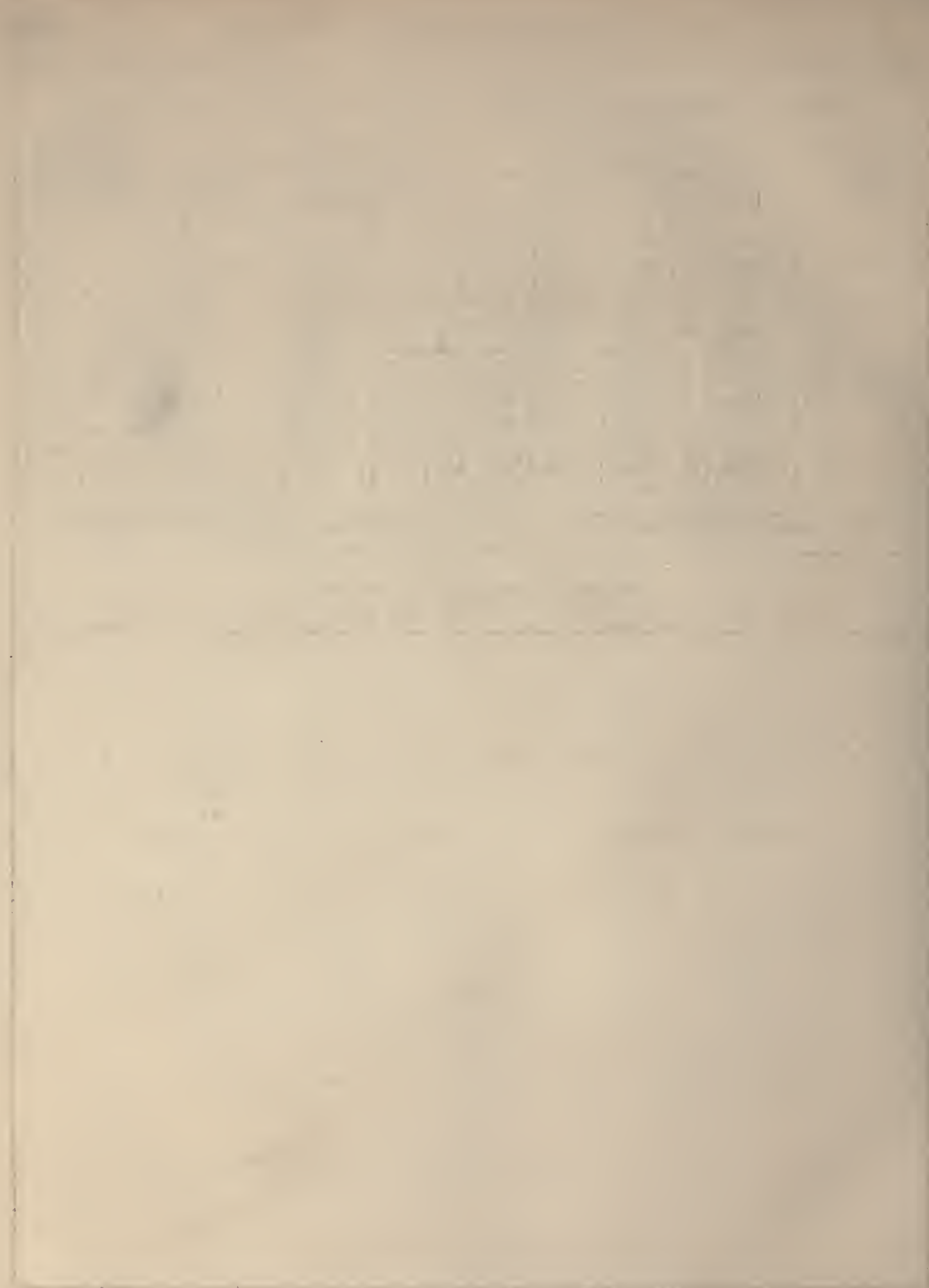
September 9. Mr. Dunkin, after this observation, altered the relative readings of the micrometers.

OBSERVATIONS of γ DRACONIS with the Reflex Zenith Tube, and Reduction of the Observations, 1854—concluded.

Day and Hour of Observation, 1854.	Observer.	Position of Mic. A.	Wire used.	Micrometer Readings.		Level Readings.		Equi- valent for Level.	Sum of Equivalents for Wire, for Micrometer- Readings, and for Level Readings.	Assumed In- strumental Constant.	Star's Z.D. North from Observation.	Correction to Mean Z.D. North for 1854, Jan. 1.	Mean Zenith Distance North, 1854, Jan. 1.
				A	B								
				r	r	div.	div.	"	"	"	"	"	"
September 11. 7 ^{d h}	E	Right	15	36.272	41.500	27.7	85.5	0.73	— 131.15	254.87	123.72	— 13.30	110.42
" " "		Left	16	36.272	43.242	13.7	71.5	0.55	+ 377.92		123.05		109.75
September 12. 6	D	Left	16	36.331	43.272	15.0	72.0	0.56	+ 379.42		124.55	— 13.33	111.22
" " "		Right	15	34.513	43.272	30.0	87.4	0.76	— 131.39		123.48		110.15
September 22. 6	L	Left	16	36.730	42.632	13.3	72.6	0.56	+ 375.37		120.50	— 13.43	107.07
September 26. 6	T	Right	15	35.231	42.530	28.3	87.0	0.75	— 130.99		123.88	— 13.35	110.53
" " "		Left	16	35.231	44.482	11.7	70.2	0.53	+ 381.24		126.37		113.02
September 27. 6	FT	Left	16	35.250	44.269	11.8	70.2	0.53	+ 377.98		123.11	— 13.33	109.78
" " "		Right	15	33.501	44.269	26.2	85.0	0.72	— 131.11		123.76		110.43

The numerical value of the Sum of Equivalents in column 10, = $w + (\text{sum of Micrometer Readings} - 70) \times 16'' \cdot 780 + \text{sum of Level Readings} \times 0'' \cdot 00646$; where w , for wire 15, = 0, and, for wire 16, = $3' \cdot 37'' \cdot 72$. The sign is positive when Micrometer A is *left*, and negative when it is *right*.

September 26. The second bisection with B quite uncertain.



ROYAL OBSERVATORY, GREENWICH.

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF

THE SECOND COMET OF 1854,

AND

NEIGHBOURING STARS,

OBSERVED WITH THE NORTH AND THE EAST EQUATOREALS.

1854.

RIGHT ASCENSIONS OF THE SECOND COMET OF 1854 AND STARS,

Day, 1854.	Name of Equatorial.	No. of Series.	OBJECT.	Clock Time of Transit.	Clock Slow.	Sidereal Time of Transit.	Hour Circle.			Concluded Reading of Hour Circle in Arc.	Concluded Reading of Hour Circle in Time.	Approx. Hour Angle West.
							Pointer.	Microscopes.				
								C	D			
Mar.30	N	1	Comet	h m s 8. 28. 17.57	s 22.03	h m s 8. 28. 39.60	o ' " 286. 30 8. 18.3			o ' " 286. 38. 18.30	h m s 19. 6. 33.22	h m 7. 6
		2	Aldebaran	9. 15. 11.30	22.13	9. 15. 33.43	252. 0 1. 0.0			252. 1. 0.00	16. 48. 4.00	4. 48
Mar.31	N	3	109 Piscium Comet	8. 7. 42.00 8. 7. 43.60	24.86	8. 8. 6.86 8. 8. 8.46						6. 31
		4	Comet	8. 32. 53.77	28.91	8. 33. 22.68	280. 10 6. 42.9	23.7	280. 16. 33.30	18. 41. 6.22	6. 41	
	N	5	Aldebaran	8. 49. 15.67	28.98	8. 49. 44.65	245. 30 3. 25.1	11.4	245. 33. 18.25	16. 22. 13.22	4. 22	
		6	Comet	8. 5. 22.90	36.26	8. 5. 59.16	266. 20 9. 51.1	39.0	266. 29. 45.05	17. 45. 59.00	5. 46	
Apr. 3	N	7	Comet	8. 25. 0.12	36.33	8. 25. 36.45	271. 10 0. 47.4	35.3	271. 10. 41.35	18. 4. 42.76	6. 5	
		8	Aldebaran	8. 43. 24.30	36.38	8. 44. 0.68	244. 0 7. 53.2	41.8	244. 7. 47.50	16. 16. 31.17	4. 16	
		9	Aldebaran	9. 24. 47.14	36.52	9. 25. 23.66	254. 20 7. 48.8	36.7	254. 27. 42.75	16. 57. 50.85	4. 58	
Apr. 4	N	10	Comet	8. 7. 55.26	39.21	8. 8. 34.47	263. 50 3. 21.7		263. 53. 21.70	17. 35. 33.45	5. 36	
		11	Comet	8. 25. 12.10	39.25	8. 25. 51.35	268. 0 9. 31.1		268. 9. 31.10	17. 52. 38.07	5. 53	
		12	Aldebaran	9. 6. 59.98	39.33	9. 7. 39.31	250. 0 2. 2.5		250. 2. 2.50	16. 40. 8.17	4. 40	
Apr. 6	N	13	Comet	8. 16. 56.52	46.87	8. 17. 43.39	260. 10 2. 11.8		260. 12. 11.80	17. 20. 48.79	5. 21	
		14	Comet	8. 28. 36.76	46.89	8. 29. 23.65	263. 0 5. 55.8		263. 5. 55.80	17. 32. 23.72	5. 32	
		15	Comet	8. 41. 35.78	46.93	8. 42. 22.71	266. 10 8. 36.7		266. 18. 26.70	17. 45. 14.45	5. 45	
		16	Comet	8. 53. 3.08	46.96	8. 53. 50.04	269. 0 8. 31.7		269. 8. 31.70	17. 56. 34.11	5. 57	
		17	Aldebaran	9. 9. 11.82	47.01	9. 9. 58.83	250. 30 7. 11.7		250. 37. 11.70	16. 42. 28.78	4. 42	
	E	19	σ Arietis..... Comet	8. 35. 11.42 8. 48. 55.00	13.30	8. 35. 24.72 8. 49. 8.30				11. 51. 4	5. 51	
		20	σ Arietis..... Comet	8. 58. 1.94 9. 11. 56.08	13.20	8. 58. 15.14 9. 12. 9.28				12. 13. 50	6. 15	
Apr. 7	E	21	Comet	9. 1. 56.3 9. 2. 14.1	11.90	9. 2. 8.20 9. 2. 26.00				11. 53. 0	5. 54	
		22	Comet	9. 13. 36.0 9. 15. 16.3	11.90	9. 13. 47.90 9. 15. 28.20				12. 4. 50	6. 6	
Apr. 8	N	23	Rümker 858	8. 53. 33.88	54.36	8. 54. 28.24	263. 40 7. 3.8		263. 47. 3.80	17. 35. 8.25	5. 35	
		24	Comet	9. 6. 30.10	54.38	9. 7. 24.48	267. 10 6. 42.3		267. 16. 42.30	17. 49. 6.82	5. 48	
		25	Rümker 858	9. 20. 39.40	54.41	9. 21. 33.81	270. 30 2. 41.2		270. 32. 41.20	18. 2. 10.75	6. 3	

March 30. The Comet was a fine object, easily seen with the naked eye in strong twilight. It had a train of several degrees in length, and its nucleus as seen in the telescope was about 17" in diameter.

April 7. The Comet was tolerably bright.

OBSERVED WITH THE EQUATOREALS.

Approx. N. P. D.	Correction for Refraction in R. A.	Correction for Parallax in R. A.	Instrumental R. A. corrected for Refraction and Parallax.	Assumed R. A. of Star.	Apparent Correction for Index Error.	R. A. of Comet. from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated R. A. of Comet.	Error of Interpolated R. A.	Observer.
° ' "	s	s	h m s	h m s	s	h m s	h m s	h m s	s	
70. 14	-22.56	+0.43	1. 21. 44.25			1. 21. 52.55	7. 57. 10.0			M
73. 45	- 5.85		4. 27. 23.58	4. 27. 31.88	+ 8.30					
70. 35	-13.49					1. 36. 58.03	7. 32. 46.3			
70. 40	-13.56	+0.44		1. 36. 56.06						
71. 13	-16.14	+0.44	1. 52. 0.76			1. 52. 6.63	7. 54. 0.5			FT
73. 46	- 4.85		4. 27. 25.98	4. 27. 31.85	+ 5.87					
72. 46	- 9.21	+0.44	2. 19. 51.39			2. 19. 57.54	7. 18. 49.6			
72. 46	-11.22	+0.44	2. 20. 42.91			2. 20. 49.06	7. 38. 23.7			
73. 46	- 4.65		4. 27. 24.86	4. 27. 31.83	+ 6.97					FT
73. 46	- 6.31		4. 27. 26.50		+ 5.33					
73. 41	- 8.69	+0.43	2. 32. 52.76			2. 32. 58.95	7. 17. 28.6			
73. 40	-10.28	+0.43	2. 33. 3.43			2. 33. 9.62	7. 34. 42.7			
73. 46.	- 5.52		4. 27. 25.62	4. 27. 31.81	+ 6.19					FT
75. 38	- 8.14	+0.41	2. 56. 46.87			2. 56. 54.09	7. 18. 44.2			
75. 38	- 9.05	+0.42	2. 56. 51.30			2. 56. 58.52	7. 30. 22.6			
75. 38	-10.37	+0.42	2. 56. 58.31			2. 57. 5.53	7. 43. 19.5			
75. 38	-11.93	+0.42	2. 57. 4.42			2. 57. 11.64	7. 54. 45.0			C
73. 45	- 5.48		4. 27. 24.57	4. 27. 31.79	+ 7.22					
75. 28	-11.01		2. 44. 9.71	2. 43. 24.82	-44.89	2. 57. 8.72	7. 50. 4.0			
75. 39	-11.11	+0.42	2. 57. 53.61							
75. 26	-10.26		2. 44. 14.88		-50.06	2. 57. 19.28	8. 13. 1.2			C
75. 37	-10.36	+0.42	2. 58. 9.34							
76. 39	-12.19	+0.41	3. 8. 56.42	3. 8. 20.28	-53.53	3. 8. 2.89	7. 59. 5.9			
76. 39	-12.19		3. 9. 13.81							
76. 39	-14.39	+0.41	3. 8. 43.92	3. 9. 47.27	-36.58	3. 8. 7.34	8. 10. 43.6			FT
76. 37	-14.35		3. 10. 23.85							
77. 44	-10.29		3. 19. 9.70	3. 19. 15.22	+ 5.52					
77. 40	-11.99	+0.40	3. 18. 6.07			3. 18. 12.34	8. 0. 25.4			
77. 43	-14.85		3. 19. 8.21		+ 7.01					

Series 1. The index correction is deduced from Series 2.

Series 4. The index correction is deduced from Series 5.

Series 6 and 7. The index correction is the mean of those deduced from Series 8 and 9.

Series 10 and 11. The index correction from Series 12.

Series 13, 14, 15, 16. The index correction from Series 17.

Series 21. The recorded times of observation of the Comet and star were at the transit over the fourth wire; in all other observations with the East Equatoreal the transit was over the third wire.

Series 24. The index correction is the mean of those deduced from Series 23 and 25.

Day, 1854.	Name of Equatorial.	No. of Series.	OBJECT.	Clock Time of Transit.	Clock Slow.	Sidereal Time of Transit.	Hour Circle.			Concluded Reading of Hour Circle in Arc.	Concluded Reading of Hour Circle in Time.	Approx. Hour Angle West.
							Pointer.	Microscopes.				
								C	D			
Apr. 8	E	26	Comet Rümker 858	h m s 8.54.55.86 8.56. 4.68	s 12.00	h m s 8.55. 7.86 8.56.16.68	° ' "	' " "	' " "	° ' "	h m s 11.36.10	h m 5.37
		27	Comet Rümker 858	9. 3.45.24 9. 4.50.46	12.00	9. 3.57.24 9. 5. 2.46					11.44.54	5.45
		28	Comet Rümker 858	9.11.48.34 9.12.50.20	12.00	9.12. 0.34 9.13. 2.40					11.52.56	5.54
		29	Comet Rümker 858	9.18.45.86 9.19.45.10	12.00	9.18.57.86 9.19.57.10					11.59.50	6. 1
		30	Comet Rümker 858	9.30.43.76 9.31.38.10	12.00	9.30.55.76 9.31.50.10					12.11.36	6.12
		31	Comet Rümker 858	9.41.17.00 9.42. 6.94	12.00	9.41.29.00 9.42.18.94					12.22. 1	6.22
Apr. 10	N	32	Comet	9.23.17.1	57.90	9.24.15.00	266.50	1.35.5		266.51.35.50	17.47.26.37	5.47
		33	Comet	9.32.33.1	57.90	9.33.31.00	269.10	1.26.8		269.11.26.80	17.56.45.79	5.57
		34	Aldebaran	10. 3.58.1	57.92	10. 4.56.02	264.20	1. 2.3		264.21. 2.30	17.37.24.15	5.37
		35	Aldebaran	10. 9. 1.5	57.92	10. 9.59.42	265.30	6.42.6		265.36.42.60	17.42.26.84	5.42
	E	36	Comet W. B. III. 767...	9.35. 2.14 9.38.45.94	11.10	9.35.13.24 9.38.57.04					11.57.39	5.58
		37	Comet W. B. III. 767...	9.48.44.22 9.52.22.90	11.10	9.48.55.32 9.52.34.00						6.12
Apr. 11	N	38	Comet	8.52. 6.1	58.66	8.53. 4.76	257. 0	6.20.0		257. 6.20.00	17. 8.25.33	5. 8
		39	Comet	9. 6. 9.0	58.67	9. 7. 7.67	260.30	5.28.3		260.35.28.30	17.22.21.89	5.22
		40	Comet	9.14.19.9	58.67	9.15.18.57	262.30	7.18.8		262.37.18.80	17.30.29.25	5.30
		41	ξ Tauri Comet	9.41.10.6 10. 6.59.5	58.69	9.42. 9.29 10. 7.58.19	275.30	8.10.7		275.38.10.70	18.22.32.71	6.23
		42	Lalande 8845 ...	10.21.37.5	58.70	10.22.36.20	267. 0	4.24.2		267. 4.24.20	17.48.17.61	5.48
	E	43	B. A. C. 1180 ... Comet	9. 1.51.82 9. 6. 2.17	11.70	9. 2. 3.52 9. 6.13.87					11.20.40	5.22
		44	B. A. C. 1180 ... Comet	9.14.23.74 9.18.38.30	11.70	9.14.35.44 9.18.50.00					11.33.17	5.33
		45	B. A. C. 1180 ... Comet	9.28.32.04 9.32.51.36	11.70	9.28.43.74 9.33. 3.06					11.47.16	5.47
		46	B. A. C. 1180 ... Comet	9.38.26.54 9.42.48.60	11.70	9.38.38.24 9.43. 0.30					11.57. 6	5.57
		47	B. A. C. 1180.... Comet	9.58.32.22 10. 3. 1.77	11.70	9.58.43.92 10. 3.13.47					12.16.57	6.18

Series 31. The Comet very faint.

Series 34 and 35. The reading of the Hour Circle has been diminished 1° in each instance.

April 10. The Comet faint.

Series 47. The clock time of transit of Comet was set down one minute greater.

Approx. N. P. D.	Correction for Refraction in R. A.	Correction for Parallax in R. A.	Instrumental R. A. corrected for Refraction and Parallax.	Assumed R. A. of Star.	Apparent Correction for Index Error.	R. A. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated R. A. of Comet.	Error of Interpolated R. A.	Observer.
° /	s	s	h m s	h m s		h m s	h m s	h m s	s	
77.42 77.44	-10.49 -10.51	+0.40	3. 18. 47.77 3. 19. 56.17	3. 19. 15.22	-40.95	3. 18. 6.82	7. 48. 10.8			C
77.42 77.44	-11.56 -11.58	+0.40	3. 18. 52.08 3. 19. 56.88		-41.66	3. 18. 10.42	7. 56. 58.7			
77.41 77.43	-12.99 -13.02	+0.40	3. 18. 51.75 3. 19. 53.38		-38.16	3. 18. 13.59	8. 5. 0.5			
77.41 77.43	-14.37 -14.41	+0.40	3. 18. 53.89 3. 19. 52.69		-37.47	3. 18. 16.42	8. 11. 56.8			
77.40 77.42	-17.13 -17.18	+0.40	3. 19. 3.03 3. 19. 56.92		-41.70	3. 18. 21.33	8. 23. 52.8			
77.38 77.40	-20.64 -20.70	+0.40	3. 19. 7.76 3. 19. 57.24		-42.02	3. 18. 25.74	8. 34. 24.3			
79.39	-13.41	+0.38	3. 36. 35.60			3. 36. 44.12	8. 9. 21.3			FT
79.38	-15.62	+0.38	3. 36. 29.97			3. 36. 38.49	8. 18. 35.8			
73.45 73.44	- 8.79 - 9.22		4. 27. 23.08 4. 27. 23.36	4. 27. 31.74	+ 8.66 + 8.38					
79.41 79.35	-15.05 -15.82	+0.38	3. 37. 18.67 3. 41. 2.22	3. 40. 21.96	-40.26	3. 36. 38.41	8. 20. 17.8			C
79.38 79.32	-20.62 -20.41	+0.38				3. 36. 43.45	8. 33. 57.6			
80.37	- 8.78	+0.36	3. 44. 31.01			3. 44. 40.13	7. 34. 20.3			FT
80.37	-10.26	+0.37	3. 44. 35.89			3. 44. 45.01	7. 48. 20.9			
80.38	-11.32	+0.37	3. 44. 38.37			3. 44. 47.49	7. 56. 30.4			
80.37 80.30	-30.53 -30.05	+0.37	3. 19. 6.05 3. 44. 55.80	3. 19. 14.33	+ 8.28	3. 45. 4.08	8. 49. 1.4			
80.35	-14.55		4. 34. 4.04	4. 34. 14.00	+ 9.96					C
80.45 80.38	-10.33 -10.27	+0.37	3. 41. 13.19 3. 45. 23.97	3. 40. 33.51	-39.68	3. 44. 44.29	7. 47. 27.2			
80.44 80.37	-11.85 -11.77	+0.37	3. 41. 6.59 3. 45. 21.60		-33.08	3. 44. 48.52	8. 0. 1.3			
80.44 80.37	-14.48 -14.36	+0.37	3. 41. 13.26 3. 45. 33.07		-39.75	3. 44. 53.32	8. 14. 12.0			
80.43 80.36	-17.09 -16.92	+0.37	3. 41. 15.15 3. 45. 37.75		-41.64	3. 44. 55.11	8. 24. 7.6			
80.39 80.34	-26.77 -26.47	+0.37	3. 41. 20.15 3. 45. 50.37		-46.64	3. 45. 3.73	8. 44. 17.5			

Series 32 and 33. The index correction is the mean of those deduced from Series 34 and 35.

Series 38, 39, and 40. The index correction is the mean of those deduced from Series 41 and 42.

Day, 1854.	Name of Equatoreal.	No. of Series.	OBJECT.	Clock Time of Transit.	Clock Slow.	Sidereal Time of Transit.	Hour Circle.			Concluded Reading of Hour Circle in Arc.	Concluded Reading of Hour Circle in Time.	Approx. Hour Angle West
							Pointer.	Microscopes				
								C	D			
Apr. 13	N	48	Comet	h m s 9. 5. 10.0	m s 1. 2.85	h m s 9. 6. 12.85	o ' " 256. 30	7. 17.5	"	o ' " 256. 37. 17.50	h m s 17. 6. 29.17	h m 5. 6
		49	Comet	9. 19. 31.1	1. 2.87	9. 20. 33.97	260. 10	1. 33.8		260. 11. 33.80	17. 20. 46.25	5. 21
		50	Comet	9. 39. 9.3	1. 2.90	9. 40. 12.20	265. 0	3. 19.2		265. 3. 19.20	17. 40. 13.28	5. 40
		46 Tauri	9. 44. 57.7		9. 46. 0.60							
		51	Comet	9. 51. 26.1	1. 2.92	9. 52. 29.02	268. 0	5. 44.5		268. 5. 44.50	17. 52. 22.97	5. 52
	46 Tauri	9. 57. 10.6		9. 58. 13.52								
	52	Comet	10. 8. 56.5	1. 2.95	10. 9. 59.45	272. 20	4. 38.7		272. 24. 38.70	18. 9. 38.58	6. 10	
	E	53	Comet	9. 29. 30.78	13.00	9. 29. 43.78					11. 29. 0	5. 30
		W. B. IV. 21 ...	9. 31. 54.00		9. 32. 7.00							
		54	Comet	9. 46. 40.06	13.00	9. 46. 53.06					11. 46. 2	5. 47
46 Tauri	9. 52. 26.18		9. 52. 39.18									
55	46 Tauri	10. 10. 26.76	13.00	10. 10. 39.76						12. 3. 57	6. 5	

Approx. N. P. D.	Correction for Refraction in R. A.	Correction for Parallax in R. A.	Instrumental R. A. corrected for Refraction and Parallax.	Assumed R. A. of Star.	Apparent Correction for Index Error.	R. A. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated R. A. of Comet.	Error of Interpolated R. A.	Observer.
° /	s	s	h m s	h m s	s	h m s	h m s	h m s	s	
82. 29	— 9.37	+ 0.35	3. 59. 34.66			3. 59. 42.81	7. 39. 34.4			FT
82. 29	— 11.24	+ 0.35	3. 59. 36.83			3. 59. 44.98	7. 53. 53.2			
82. 28	— 14.76	+ 0.36	3. 59. 44.52			3. 59. 52.51	8. 13. 28.2			
82. 35	— 14.89		4. 5. 32.43	4. 5. 40.42	+ 7.99					
82. 27	— 18.23	+ 0.36	3. 59. 48.18			3. 59. 56.48	8. 25. 43.0			
82. 34	— 18.43		4. 5. 32.12		+ 8.30					C
82. 24	— 27.36	+ 0.36	3. 59. 53.87			4. 0. 2.02	8. 43. 10.5			
82. 28	— 12.68	+ 0.35	4. 0. 31.45			3. 59. 51.10	8. 3. 1.5			
82. 36	— 12.79		4. 2. 54.21	4. 2. 13.86	— 40.35					
82. 28	— 16.62	+ 0.36	4. 0. 34.80			3. 59. 54.83	8. 20. 7.9			
82. 35	— 16.79		4. 6. 20.39	4. 5. 40.42	— 39.97					
82. 32	— 24.42		4. 6. 18.34		— 37.92					

Series 48, 49, and 52. The index correction is the mean of those derived from Series 50 and 51.

NORTH POLAR DISTANCES OF THE SECOND COMET OF 1854, AND STARS,

Day, 1854.	Name of Equatoreal.	No. of Series.	OBJECT.	Declination Circle.			Cor. for Runs.	Concluded Circle Reading.	Name of Micro- meter.	Micro- meter Reading.	Micrometer Reading in Arc.	Approx. Hour Angle West.	Approx. N.P. D.
				Pointer.	Verniers.								
					A	B							
Mar. 30	N	1	Comet.....	109. 35	2. 14.5	3. 5.3	—1.6	109. 37. 39.10		r	0 1 "	h m	0 1
		2	Aldebaran	106. 10	1. 26.0	2. 15.0	—1.2	106. 11. 49.90				4. 48	73. 45
Mar. 31	N	3	Comet.....	109. 15	4. 56.9	5. 38.3	—3.3	109. 20. 15.95	a	105.530	— 54. 59.92	6. 31	70. 40
		3*	109 Piscium	109. 15	4. 56.9	5. 38.3	—3.3	109. 20. 15.95	a	95.353	— 49. 41.69	6. 35	70. 35
Apr. 1	N	4	Comet.....	108. 40	4. 0.7	4. 48.5	—2.7	108. 44. 23.25				6. 41	71. 13
		5	Aldebaran	106. 10	1. 15.2	2. 6.4	—1.0	106. 11. 40.30				4. 22	73. 46
Apr. 3	N	6	Comet.....	107. 10	1. 38.0	2. 32.4	—1.3	107. 12. 4.55				5. 46	72. 46
		7	Comet.....	107. 10	1. 40.0	2. 33.0	—1.3	107. 12. 5.85				6. 5	72. 46
		8	Aldebaran	106. 10	1. 26.5	2. 20.4	—1.2	106. 11. 52.85				4. 16	73. 46
		9	Aldebaran	106. 10	1. 39.4	2. 33.0	—1.3	106. 12. 5.55				4. 58	73. 46
Apr. 4	N	10	Comet.....	106. 15	1. 59.7	2. 53.2	—1.5	106. 17. 25.70				5. 36	73. 41
		11	Comet.....	106. 15	1. 47.9	2. 40.3	—1.4	106. 17. 13.40				5. 53	73. 40
		12	Aldebaran	106. 10	1. 25.0	2. 22.0	—1.2	106. 11. 52.90				4. 40	73. 46
Apr. 6	N	13	Comet.....	104. 15	4. 9.5	4. 58.5	—2.8	104. 19. 32.60				5. 21	75. 38
		14	Comet.....	104. 15	3. 48.0	4. 39.4	—2.6	104. 19. 12.40				5. 32	75. 38
		15	Comet.....	104. 15	3. 35.4	4. 22.3	—2.4	104. 18. 57.65				5. 45	75. 38
		16	Comet.....	104. 15	3. 30.1	4. 19.2	—2.4	104. 18. 53.45				5. 57	75. 38
		17	Aldebaran	106. 10	1. 33.6	2. 26.2	—1.2	106. 11. 59.30				4. 42	73. 45
		18	Aldebaran	106. 10	1. 40.0	2. 36.6	—1.3	106. 12. 7.65				4. 54	73. 45
Apr. 8	N	23	Comet..... Rümker 858.....	102. 15	1. 10.1	2. 5.2	—1.0	102. 16. 37.15	a a	100.000 105.305	— 52. 7.00 — 54. 52.89	5. 35	77. 40 77. 44
		24	Comet.....	102. 15	1. 7.9	2. 0.1	—1.0	102. 16. 33.50	a	100.000	— 52. 7.00	5. 48	77. 40
		25	Rümker 858.....	102. 10	4. 48.9	5. 39.0	—3.2	102. 15. 12.35	a	100.000	— 52. 7.00	6. 3	77. 43
Apr. 10	N	32	Comet.....	100. 15	1. 51.2	2. 42.4	—1.4	100. 17. 16.10				5. 47	79. 39
		33	Comet.....	100. 15	2. 5.0	2. 53.8	—1.5	100. 17. 28.65				5. 57	79. 38
		34	Aldebaran	106. 10	2. 36.1	3. 29.3	—1.9	106. 13. 1.75				5. 37	73. 45
		35	Aldebaran	106. 10	2. 47.1	3. 41.3	—2.0	106. 13. 13.20				5. 42	73. 44

Series 3. One revolution of Micrometer $a = 31''.270$.

OBSERVED WITH THE NORTH EQUATORIAL.

Correction for Refraction in N. P. D.	Correction for Parallax in N. P. D.	N. P. D. subject to Instrumental Error.	Assumed N. P. D. of Star.	Apparent Correction for Index Error.	N. P. D. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated N. P. D. of Comet.	Error of Interpolated N. P. D.	Observer.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h m s	° ' "	"	
+7. 459	- 798	70. 29. 17.51			70. 26. 45.80	7. 57. 10.0			M
+1. 39.16		73. 49. 49.26	73. 47. 17.55	- 2. 31.71					
+3. 58.18	- 769	71. 38. 34.46			70. 43. 54.40	7. 32. 46.3			
+4. 11.14		71. 33. 36.88	70. 38. 56.82	- 54. 40.06					M
+4. 50.37	- 782	71. 20. 19.30			71. 17. 53.53	7. 54. 0.5			
+1. 23.67		73. 49. 43.37	73. 47. 17.60	- 2. 25.77					
+2. 36.16	- 735	72. 50. 24.26			72. 48. 7.35	7. 18. 49.6			FT
+3. 13.92	- 751	72. 51. 0.56			72. 48. 43.65	7. 38. 23.7			
+1. 20.74		73. 49. 27.89	73. 47. 17.62	- 2. 10.27					
+1. 46.72		73. 49. 41.17		- 2. 23.55					FT
+2. 27.92	- 726	73. 44. 54.96			73. 42. 31.64	7. 17. 28.6			
+2. 57.20	- 739	73. 45. 36.41			73. 43. 13.09	7. 34. 42.7			
+1. 33.85		73. 49. 40.95	73. 47. 17.63	- 2. 23.32					FT
+2. 20.98	- 709	75. 42. 41.29			75. 40. 24.06	7. 18. 44.2			
+2. 37.14	- 716	75. 43. 17.58			75. 41. 0.35	7. 30. 22.6			
+3. 1.23	- 725	75. 43. 56.33			75. 41. 39.10	7. 43. 19.5			FT
+3. 30.41	- 733	75. 44. 29.63			75. 42. 12.40	7. 54. 45.0			
+1. 33.13		73. 49. 33.83	73. 47. 17.65	- 2. 16.18					
+1. 43.57		73. 49. 35.92		- 2. 18.27					FT
+3. 1.97	- 702	78. 38. 24.80							
+3. 2.68		78. 41. 18.42	77. 46. 37.43	- 54. 40.99	77. 43. 43.81	7. 46. 28.2			
+3. 33.97	- 709	78. 39. 0.38			77. 44. 17.37	8. 0. 25.4			FT
+4. 27.80		78. 41. 22.45		- 54. 45.02					
+4. 2.92	- 688	79. 46. 39.94			79. 44. 31.35	8. 9. 21.3			
+4. 44.33	- 692	79. 47. 8.76			79. 45. 0.17	8. 18. 35.8			FT
+2. 29.82		73. 49. 28.07	73. 47. 17.69	- 2. 10.38					
+2. 37.69		73. 49. 24.49		- 2. 6.80					

Series 1. The Index Error from Series 2.

Series 3. The Index Error from Series 3*.

Series 4. The Index Error from Series 5.

Series 6 and 7. The Index Error is the mean of those derived from Series 8 and 9.

Series 10 and 11. The Index Error from Series 12.

Series 13, 14, 15 and 16. The Index Error is the mean of those derived from Series 17 and 18.

Series 24. The Index Error is the mean of those derived from Series 23 and 25.

Series 32 and 33. The Index Error is the mean of those derived from Series 34 and 35.

Day, 1854.	Name of Equatoreal.	No. of Series.	OBJECT.	Declination Circle.			Cor. for Runs.	Concluded Circle Reading.	Name of Micro- meter.	Micro- meter Reading.	Micrometer Reading in Arc.	Approx. Hour Angle West.	Approx. N. P. D.
				Pointer.	Verniers.								
					A	B							
Apr. 11	N	38	Comet.....	99. 15	3. 52.0	4. 45.5	—2.6	99. 19. 17.45	a	100.000	— 52. 7.00	5. 8	80. 37
		39	Comet.....	99. 15	3. 46.1	4. 40.2	—2.6	99. 19. 11.85	a	100.000	— 52. 7.00	5. 22	80. 37
		40	Comet.....	99. 15	3. 42.9	4. 36.2	—2.6	99. 19. 8.25	a	100.000	— 52. 7.00	5. 30	80. 38
		41	ξ Tauri	99. 20	0. 8.0	1. 1.6	—0.4	99. 20. 34.60	a	100.000	— 52. 7.00	6. 23	80. 37
			Comet.....						a	95.013	— 49. 31.06		80. 30
Apr. 13	N	48	Comet.....	97. 25	3. 54.0	4. 48.0	—2.7	97. 29. 19.65	a	100.000	— 52. 7.00	5. 6	82. 29
		49	Comet.....	97. 20	2. 17.1	3. 13.5	—1.7	97. 22. 44.45	a	87.500	— 45. 36.13	5. 21	82. 29
			46 Tauri.....						a	101.955	— 53. 8.13		82. 35
		50	Comet.....	97. 20	2. 17.1	3. 13.5	—1.7	97. 22. 44.45	a	86.738	— 45. 12.30	5. 40	82. 28
			46 Tauri.....						a	100.000	— 52. 7.00		82. 35
		51	Comet.....	97. 20	2. 16.9	3. 10.9	—1.7	97. 22. 43.05	a	85.301	— 44. 27.36	5. 52	82. 27
			46 Tauri.....						a	97.352	— 50. 44.20		82. 34
		52	Comet.....	97. 30	0. 45.3	1. 38.6	—0.7	97. 31. 11.60	a	97.353	— 50. 44.23	6. 10	82. 24

Correction for Refraction in N.P. D.	Correction for Parallax in N.P.D.	N. P. D. subject to Instrumental Error.	Assumed N.P.D. of Star.	Apparent Correction for Index Error.	N.P.D. of Comet from the Observation.	Mean Solar Time for Observation of Comet.	Interpolated N.P.D. of Comet.	Error of Interpolated N.P.D.	Observer.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h m s	° ' "	"	
+ 2. 40.32	— 6.61	81. 35. 23.26			80. 41. 9.96	7. 34. 20.3			FT
+ 3. 6.60	— 6.67	81. 35. 55.08			80. 41. 41.78	7. 48. 20.9			
+ 3. 25.88	— 6.70	81. 36. 17.93			80. 42. 4.63	7. 56. 30.4			
+ 9. 30.22		81. 41. 2.62	80. 46. 49.32	— 54. 13.30	80. 43. 57.24	8. 49. 1.4			
+ 9. 20.98	— 6.90	81. 38. 10.54							FT
+ 2. 54.10	— 6.40	83. 25. 35.05			82. 31. 34.00	7. 39. 34.4			
+ 3. 27.50	— 6.44	83. 26. 12.74							
+ 3. 28.86		83. 33. 52.54	82. 39. 42.67	— 54. 9.87	82. 32. 2.87	7. 53. 53.2			
+ 4. 31.91	— 6.50	83. 26. 53.26							
+ 4. 34.52		83. 33. 37.07		— 53. 54.30	82. 32. 58.80	8. 13. 28.2			
+ 5. 36.53	— 6.54	83. 27. 14.30							
+ 5. 40.50		83. 33. 41.65		— 53. 58.98	82. 33. 15.32	8. 25. 43.0			
+ 8. 29.41	— 6.59	83. 27. 55.45			82. 33. 54.39	8. 43. 10.5			

Series 38, 39, and 40. The Index Error from Series 41.

Series 48 and 52. The Index Error used is the mean of all the determinations on this day.



ROYAL OBSERVATORY, GREENWICH.

ECLIPSES, OCCULTATIONS, AND TRANSITS

OF

JUPITER'S SATELLITES,

COMPARED WITH THE NAUTICAL ALMANAC:

AND

OCCULTATIONS OF STARS BY THE MOON;

WITH THE

EQUATIONS DEDUCED FROM THE OCCULTATIONS.

1854.

ECLIPSES, OCCULTATIONS, and TRANSITS of JUPITER'S SATELLITES, 1854.

Day of Observation.	Satellite.	Phenomenon.	Phase of Phenomenon.	Observer.	Instrument.	Clock or Chronometer.	Time Noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.	Mean Time of Nautical Almanac.	Apparent Error of Nautical Almanac.
							h m s	h m s	h m s	h m s	h m s	m s
July 25	I	Egress.....	First cont.	FT	E. Eq.	Earn.	17. 58. 40.0	17. 59. 13.0	17. 59. 16.29	9. 46. 11.65		
		Egress.....	Central bis.	FT	E. Eq.	Earn.	18. 0. 44.0	18. 1. 17.0	18. 1. 20.30	9. 48. 15.33	9. 48	
		Egress.....	Last cont..	FT	E. Eq.	Earn.	18. 2. 58.0	18. 3. 31.0	18. 3. 34.30	9. 50. 28.97		
July 25	II	Ingress.....	First cont.	FT	E. Eq.	Earn.	18. 14. 0.0	18. 14. 33.0	18. 14. 36.31	10. 1. 29.17		
		Ingress.....	Central bis.	FT	E. Eq.	Earn.	18. 16. 20.0	18. 16. 53.0	18. 16. 56.31	10. 3. 48.79	10. 8	
		Ingress.....	Last cont..	FT	E. Eq.	Earn.	18. 18. 20.0	18. 18. 53.0	18. 18. 56.31	10. 5. 48.46		
Aug. 24	I	Ingress.....	Central bis.	FT	E. Eq.	Earn.	19. 6. 50.0	19. 7. 40.1	19. 8. 15.23	8. 57. 2.00	8. 57	
Sept. 9	I	Egress.....	Central bis.	E	Altaz.	G ¹	20. 36. 0.0	20. 35. 40.5	20. 36. 30.61	9. 22. 8.38	9. 21	
		Egress.....	Last cont..	E	Altaz.	G ¹	20. 40. 0.0	20. 39. 40.5	20. 40. 30.61	9. 26. 7.73		
Sept. 11	II	Occult. im...	First cont.	E	E. Eq.	Arn. 82	18. 52. 30.0	18. 52. 30.0	18. 52. 47.32	7. 30. 50.27		
		Occult. im...	Central bis.	E	E. Eq.	Arn. 82	18. 55. 30.0	18. 55. 30.0	18. 55. 47.32	7. 33. 49.78	7. 35	
		Occult. im...	Total imm.	E	E. Eq.	Arn. 82	18. 58. 0.0	18. 58. 0.0	18. 58. 17.32	7. 36. 19.37		
Sept. 20	II	Egress.....	Central bis.	D	E. Eq.	Arn. 82	19. 59. 30.0	19. 59. 30.0	19. 59. 52.72	8. 2. 21.50	8. 3	
		Egress.....	Last cont..	D	E. Eq.	Arn. 82	20. 2. 30.0	20. 2. 30.0	20. 2. 52.72	8. 5. 21.01		
Sept. 22	IV	(a) Ecl. reap.		HB	E. Eq.	Arn. 82	18. 36. 10.0	18. 35. 35.5	18. 35. 59.18	6. 30. 49.91	6. 36. 50.9	+ 6. 0.99
Sept. 25	I	Egress.....	Central bis.	E	E. Eq.	Arn. 82	19. 48. 0.0	19. 48. 0.0	19. 48. 24.94	7. 31. 16.08	7. 32	
		Egress.....	Last cont..	E	E. Eq.	Arn. 82	19. 51. 0.0	19. 51. 0.0	19. 51. 24.94	7. 34. 15.58		
Sept. 26	III	(b) Occult. em	Central bis.	T	E. Eq.	Arn. 82	19. 59. 52.0	19. 59. 52.0	20. 0. 17.31	7. 39. 10.59	7. 45	
		Occult. em ..	Last cont..	T	E. Eq.	Arn. 82	20. 1. 48.0	20. 1. 48.0	20. 2. 13.31	7. 41. 6.27		
Sept. 26	III	(c) Ecl. disap.		T	E. Eq.	Arn. 82	21. 47. 9.0	21. 47. 9.0	21. 47. 34.35	9. 26. 10.06	9. 29. 45.5	+ 3. 35.44
Sept. 27	II	Ingress.....	First cont.	FT	E. Eq.	Arn. 82	20. 2. 30.0	20. 1. 32.0	20. 1. 57.84	7. 36. 54.94		
		Ingress.....	Central bis.	FT	E. Eq.	Arn. 82	20. 5. 0.0	20. 4. 2.0	20. 4. 27.84	7. 39. 24.52	7. 42	
		Ingress.....	Last cont..	FT	E. Eq.	Arn. 82	20. 7. 0.0	20. 6. 2.0	20. 6. 27.84	7. 41. 24.20		
Sept. 29	II	Ecl. reap. ...		M	Altaz.	G ¹	19. 48. 30.0	19. 48. 42.2	19. 49. 8.83	7. 16. 16.21	7. 16. 11.5	— 4.71
		(d) Ecl. reap.		L	E. Eq.	Arn. 82	19. 49. 40.0	19. 50. 7.0	19. 50. 33.63	7. 17. 40.79	7. 16. 11.5	— 1. 29.29
Oct. 2	I	Ingress.....	First cont..	T	E. Eq.	Arn. 82	19. 46. 0.0	19. 45. 25.4	19. 45. 52.51	7. 1. 12.71		
		Ingress.....	Central bis.	T	E. Eq.	Arn. 82	19. 49. 30.0	19. 48. 55.4	19. 49. 22.51	7. 4. 42.14	7. 6	
		Ingress.....	Last cont..	T	E. Eq.	Arn. 82	19. 53. 30.0	19. 52. 55.4	19. 53. 22.51	7. 8. 41.49		
Nov. 1	III	(e) Ecl. disap.		E	E. Eq.	Arn. 82	20. 15. 13.0	20. 14. 30.0	20. 15. 1.10	5. 32. 19.28	5. 33. 17.7	+ 58.42

(a) The sky was cloudy and hazy ; at the time noted the satellite was faintly seen, and the observer does not think that it had been visible many seconds previously. Its brightness increased afterwards.

(b) The image of the planet diffused.

(c) Very exact.

(d) Not very exact.

(e) The disappearance was very gradual ; the time noted being that at which the satellite was last seen.

OCCULTATIONS OF STARS by the MOON, 1854.

Day of Observation.	Star's Name.	Phenomenon.	Moon's Limb.	Observer.	Instrument.	Clock or Chronometer.	Time noted.	Time by Transit Clock.	Sidereal Time.	Mean Solar Time.
Feb. 7	121 Tauri	Disap.	Dark	JII	Altaz.	G ¹	h m s 10. 17. 50	h m s 10. 17. 27	h m s 10. 17. 41	h m s 13. 6. 24
Mar. 12	Mars	{ Disap. . . } first cont.	Dark	II	N. Equat.	A ¹	14. 31. 52	14. 33. 29	14. 33. 50	15. 12. 7
	Mars	{ Disap. . . } cent. bis.	Dark	II	N. Equat.	A ¹	14. 32. 20	14. 33. 57	14. 34. 18	15. 12. 35
	(a) Mars	{ Total disap. . }	Dark	II	N. Equat.	A ¹	14. 32. 51	14. 34. 29	14. 34. 50	15. 13. 7
Mar. 12	(a ₁) Mars	{ Disap. . } cent. bis.	Dark	E	Altaz.	G ¹	14. 33. 17	14. 33. 51	14. 34. 12	15. 12. 29
	(b) Mars	{ Total disap. . }	Dark	E	Altaz.	G ¹	14. 33. 54	14. 34. 28	14. 34. 50	15. 13. 6
Mar. 12	(c) Mars	{ Reap. . . } last cont.	Bright	II	N. Equat.	A ¹	14. 58. 15	14. 59. 52	15. 0. 13	15. 38. 25
Mar. 12	(d) Mars	{ Reap. . . } first app.	Bright	E	Altaz.	G ¹	14. 58. 22	14. 58. 56	14. 59. 17	15. 37. 30
	(e) Mars	{ Reap. . . } cent. bis.	Bright	E	Altaz.	G ¹	14. 58. 45	14. 59. 19	14. 59. 40	15. 37. 53
	(f) Mars	{ Reap. . . } last cont.	Bright	E	Altaz.	G ¹	14. 59. 16	14. 59. 50	15. 0. 11	15. 38. 24
April 4	(g) ε Geminorum . .	Disap.	Dark	D	Altaz.	G ¹	13. 41. 54	13. 42. 38	13. 42. 38	12. 50. 38
	(h) ε Geminorum . .	Reap.	Bright	D	Altaz.	G ¹	13. 54. 18	13. 55. 2	13. 55. 2	13. 2. 59
May 6	(i) i Leonis	Disap.	Dark	D	N. Equat.	A ¹	10. 36. 29	10. 37. 39	10. 37. 41	7. 40. 22
	(k) i Leonis	Disap.	Dark	E	Altaz.	G ¹	10. 36. 56	10. 37. 38	10. 37. 41	7. 40. 21
July 5	(l) 8 Libræ	Reap.	Bright	FT	Altaz.	G	16. 44. 30	16. 44. 1	16. 44. 37	9. 50. 23
Sept. 19	(m) i Leonis	Reap.	Dark	M	N. Equat.	A ¹	4. 18. 43	4. 18. 32	4. 18. 55	16. 23. 58
Sept. 30	(n) ω Sagittarii . .	Disap.	Dark	T	E. Equat.	Arn. 82	18. 52. 48	18. 53. 8	18. 53. 35	6. 16. 56
	(o) ω Sagittarii . .	Disap.	Dark	FT	Altaz.	G ¹	18. 52. 55	18. 53. 8	18. 53. 35	6. 16. 55
Sept. 30	(p) ω Sagittarii . .	Reap.	Bright	T	E. Equat.	Arn. 82	20. 6. 45	20. 7. 4	20. 7. 31	7. 30. 39
Sept. 30	(q) A Sagittarii . .	Disap.	Dark	T	E. Equat.	Arn. 82	20. 30. 42	20. 31. 2	20. 31. 29	7. 54. 33
	(r) A Sagittarii . .	Disap.	Dark	FT	Altaz.	G ¹	20. 30. 49	20. 31. 2	20. 31. 29	7. 54. 33
Sept. 30	(s) A Sagittarii . .	Reap.	Bright	T	E. Equat.	Arn. 82	21. 43. 0	21. 43. 19	21. 43. 46	9. 6. 38
Oct. 11	(t) 139 Tauri	Reap.	Dark	FT	E. Equat.	Arn. 82	5. 17. 48	5. 17. 2	5. 17. 32	15. 55. 55
Dec. 10	(u) B. A. C. 3579 .	Reap.	Dark	D	Altaz.	G ¹	9. 42. 10	9. 42. 43	9. 43. 21	16. 25. 6
Dec. 10	i Leonis	Reap.	Dark	D	Altaz.	G ¹	12. 18. 38	12. 19. 11	12. 19. 49	19. 1. 9

(a) (i) (k)-(n) Very good.

(a₁) (d) (e) The observations are only approximate.

(b) This observation was considered to be within a quarter of a second of the truth.

(c) Air hazy; the Moon tremulous.

(f) Probably correct to 1^s.

(g) The disappearance was not instantaneous.

(h) The observation good, though the star was projected on the Moon's limb after it became visible, and did not separate entirely from it for about four seconds. The time noted is that at which it was first seen as a brilliant point at the edge of the Moon.

(l) The observation not good; the time is probably in error 5^s to 10^s, and the observation is not reduced finally.

(m) Thin clouds prevalent, but the observation satisfactory. The unenlightened surface of the Moon could be distinctly traced.

(o) Very exact; the disappearance instantaneous.

(p) Very exact; seen immediately on its reappearance.

(q) Very exact.

(r) The observation good; very exact.

(s) The observation is uncertain to 2^s or 3^s; the star had separated a very small distance from the Moon's limb.(t) The observation is true to 0^s.2 or 0^s.3, the eye of the observer having been directed to the exact point of reappearance.

(u) Very doubtful; the observation worthless in consequence of the star's extreme faintness.

Disappearance of 121 Tauri, 1854, February 7^d. 13^h. 6^m. 24^s.96 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	154. 25. 16.80	"	+ 15.0	$\times t$
Moon's Right Ascension in arc	81. 57. 16.35	+ x	+ 0.5359	$\times t$
Moon's N.P.D.	65. 27. 4.77	+ y	- 0.0695	$\times t$
Moon's Horizontal Equatoreal Parallax	54. 7.24	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	14. 46.83	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	81. 38. 6.30	+ e''		
Star's N.P.D.	66. 3. 38.90	+ f	"	"
Geocentric R.A. of corresponding point in arc	82. 13. 33.80	+ e	+ 0.0447 $\times t$	+ 2.1275 $\times m$
Geocentric N.P.D. of corresponding point.	65. 29. 15.15	+ f	- 0.0556 $\times t$	- 2.0638 $\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned} & 14. 58.73 + 0.9003 \times \left\{ + e - x - 0.4912 \times t + 2.1275 \times m \right\} \\ & + 0.1461 \times \left\{ f - 0.0556 \times t - 2.0638 \times m \right\} \\ & - 0.1441 \times \left\{ y - 0.0695 \times t \right\} \end{aligned}$$

Final Equation.

$$-11.90 = + 0.9003 \times e + 0.1461 \times f - 0.9003 \times x - 0.1441 \times y - 0.4403 \times t + 1.6139 \times m - 0.8868 \times n$$

Disappearance of the Center of Mars, 1854, March 12^d. 15^h. 12^m. 36^s.81 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	218. 34. 59.85	"	+ 15.0	$\times t$
Moon's Right Ascension in arc	156. 37. 42.45	+ x	+ 0.5143	$\times t$
Moon's N.P.D.	74. 49. 59.68	+ y	+ 0.1942	$\times t$
Moon's Horizontal Equatoreal Parallax	56. 7.92	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	15. 19.76	$\times \left(1 + \frac{n}{1000}\right)$		
Tabular R.A. of Center of Planet	156. 4. 24.90	+ e''	- 0.0136	$\times t$
Parallax of Planet in R.A.	7.05			
Tabular N.P.D. of Center of Planet.	75. 43. 19.00	+ f	- 0.0038	$\times t$
Parallax of Planet in N.P.D.	8.46	"	"	"
Geocentric R.A. of corresponding point in arc	156. 36. 27.49	+ e	$\left\{ \begin{array}{l} - 0.0136 \\ + 0.0695 \end{array} \right\} \times t$	+ 1.9296 $\times m$
Geocentric N.P.D. of corresponding point.	75. 5. 7.06	+ f	$\left\{ \begin{array}{l} - 0.0038 \\ - 0.0333 \end{array} \right\} \times t$	- 2.3004 $\times m$

Geocentric distance of center from corresponding point,

$$\begin{aligned} & 15. 10.26 + 0.0768 \times \left\{ - e + x + 0.4584 \times t - 1.9296 \times m \right\} \\ & + 0.9968 \times \left\{ f - 0.0371 \times t - 2.3004 \times m \right\} \\ & - 0.9968 \times \left\{ y + 0.1942 \times t \right\} \end{aligned}$$

Final Equation.

$$+ 9.50 = - 0.0768 \times e + 0.9968 \times f + 0.0768 \times x - 0.9968 \times y - 0.1854 \times t - 2.4412 \times m - 0.9198 \times n$$

Reappearance of the Center of Mars, 1854, March 12^d. 15^h. 37^m. 55^s.85 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	224.	55.	47.	85	+ 15.0	$\times t$
Moon's Right Ascension in arc.....	156.	50.	43.	35	+ x	+ 0.5139 $\times t$
Moon's N. P. D.	74.	54.	55.	50	+ y	+ 0.1955 $\times t$
Moon's Horizontal Equatoreal Parallax	56.	8.	55	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	15.	19.	93	$\times \left(1 + \frac{n}{1000}\right)$		
Tabular Right Ascension of Center of Planet.....	156.	4.	4.	35	+ e''	- 0.0136 $\times t$
Parallax of Planet in Right Ascension	7.	50				
Tabular N. P. D. of Center of Planet	75.	43.	13.	28	+ f	- 0.0038 $\times t$
Parallax of Planet in N. P. D.	8.	66			"	"
Geocentric R. A. of corresponding point in arc	156.	37.	46.	27	+ e	$\left\{ \begin{array}{l} -0.0136 \\ +0.0534 \end{array} \right\} \times t + 2.0294 \times m$
Geocentric N. P. D. of corresponding point.....	75.	4.	9.	00	+ f	$\left\{ \begin{array}{l} -0.0038 \\ -0.0344 \end{array} \right\} \times t - 2.3529 \times m$

Geocentric distance of center from corresponding point,

$$15.32.59 + 0.7775 \times \left\{ -e + x + 0.4741 \times t - 2.0294 \times m \right\} \\ + 0.5939 \times \left\{ f - 0.0382 \times t - 2.3529 \times m \right\} \\ - 0.5931 \times \left\{ y + 0.1955 \times t \right\}$$

Final Equation.

$$-12.66 = -0.7775 \times e + 0.5939 \times f + 0.7775 \times x - 0.5931 \times y + 0.2300 \times t - 2.9753 \times m - 0.9199 \times n$$

Disappearance of ϵ Geminorum, 1854, April 4^d. 12^h. 50^m. 38^s.00 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	205.	39.	38.	70	+ 15.0	$\times t$
Moon's Right Ascension in arc.....	99.	18.	15.	75	+ x	+ 0.5498 $\times t$
Moon's N. P. D.	63.	46.	32.	82	+ y	- 0.0038 $\times t$
Moon's Horizontal Equatoreal Parallax.....	54.	14.	51	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	14.	48.	77	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	98.	44.	8.	25	+ e''	
Star's N. P. D.....	64.	43.	39.	40	+ f	"
Geocentric R. A. of corresponding point in arc.....	99.	20.	9.	83	+ e	- 0.0480 $\times t + 2.1616 \times m$
Geocentric N. P. D. of corresponding point.....	64.	1.	19.	39	+ f	- 0.0585 $\times t - 2.5400 \times m$

Geocentric distance of center from corresponding point,

$$14.52.47 + 0.1031 \times \left\{ +e - x - 0.5978 \times t + 2.1616 \times m \right\} \\ + 0.9933 \times \left\{ f - 0.0585 \times t - 2.5400 \times m \right\} \\ - 0.9933 \times \left\{ y - 0.0038 \times t \right\}$$

Final Equation.

$$-3.70 = +0.1031 \times e + 0.9933 \times f - 0.1031 \times x - 0.9933 \times y - 0.1159 \times t - 2.3001 \times m - 0.8888 \times n$$

Reappearance of ϵ Geminorum, 1854, April 4^d. 13^h. 2^m. 59^s.96 + t^s , Greenwich Mean Solar Time.

	o	i	"	"	"	
Right Ascension of Zenith in arc.....	208.45.	38.55			+ 15.0	$\times t$
Moon's Right Ascension in arc.....	99.25.	3.75	+ x		+ 0.5498	$\times t$
Moon's N. P. D.	63.46.	29.93	+ y		- 0.0038	$\times t$
Moon's Horizontal Equatoreal Parallax.....	54.14.52	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	14.48.78	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in arc	98.44.	8.25	+ e''			
Star's N.P.D.	64.43.39.40	+ f'		"	"	
Geocentric R.A. of corresponding point in arc	99.19.31.35	+ e	- 0.0556	$\times t$	+ 2.1231	$\times m$
Geocentric N.P.D. of corresponding point	64. 0.34.72	+ f	- 0.0573	$\times t$	- 2.5847	$\times m$

Geocentric distance of center from corresponding point,

$$14.55.97 + 0.2992 \times \left\{ -e + x + 0.6054 \times t - 2.1231 \times m \right\} \\ + 0.9429 \times \left\{ f' - 0.0573 \times t - 2.5847 \times m \right\} \\ - 0.9427 \times \left\{ y - 0.0038 \times t \right\}$$

Final Equation.

$$-7.19 = -0.2992 \times e + 0.9429 \times f' + 0.2992 \times x - 0.9427 \times y + 0.1307 \times t - 3.0751 \times m - 0.8888 \times n$$

Disappearance of ι Leonis, 1854, May 6^d. 7^h. 40^m. 22^s.25 + t^s , Greenwich Mean Solar Time.

	o	i	"	"	"	
Right Ascension of Zenith in arc	159.25.24.00				+ 15.0	$\times t$
Moon's Right Ascension in arc	156. 1.15.45	+ x			+ 0.5020	$\times t$
Moon's N.P.D.....	74.20.17.04	+ y			+ 0.1907	$\times t$
Moon's Horizontal Equatoreal Parallax	55.39.23	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	15.11.90	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in arc	156. 6. 7.80	+ e''				
Star's N.P.D.....	75. 6.57.10	+ f'		"	"	
Geocentric R.A. of corresponding point in arc.....	156. 8.13.04	+ e	+ 0.1537	$\times t$	+ 0.1252	$\times m$
Geocentric N.P.D. of corresponding point	74.33.58.37	+ f	- 0.0023	$\times t$	- 1.9787	$\times m$

Geocentric distance of center from corresponding point,

$$15.14.57 + 0.4238 \times \left\{ +e - x - 0.3483 \times t + 0.1252 \times m \right\} \\ + 0.8981 \times \left\{ f' - 0.0023 \times t - 1.9787 \times m \right\} \\ - 0.8979 \times \left\{ y + 0.1907 \times t \right\}$$

Final Equation.

$$-2.67 = +0.4238 \times e + 0.8981 \times f' - 0.4238 \times x - 0.8979 \times y - 0.3209 \times t - 1.7239 \times m - 0.9119 \times n$$

Reappearance of ι Leonis, 1854, September 19^d. 16^h. 23^m. 58^s.01 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	64. 43. 46.05	+	15.0	$\times t$
Moon's Right Ascension in arc	155. 45. 25.80	+	x	+ 0.4932 $\times t$
Moon's N.P.D.	74. 30. 10.61	+	y	+ 0.1922 $\times t$
Moon's Horizontal Equatoreal Parallax	55. 3.43	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	15. 2.16	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	156. 6. 4.20	+ e''		
Star's N.P.D.	75. 6. 57.40	+ f	"	"
Geocentric R.A. of corresponding point in arc	155. 30. 24.64	+ e	- 0.0051 $\times t$	- 2.1396 $\times m$
Geocentric N.P.D. of corresponding point	74. 25. 21.37	+ f	+ 0.0369 $\times t$	- 2.4960 $\times m$

Geocentric distance of center from corresponding point,

$$15. 15.14 + 0.9139 \times \left\{ -e + x + 0.4983 \times t + 2.1396 \times m \right\} \\ - 0.3155 \times \left\{ f + 0.0369 \times t - 2.4960 \times m \right\} \\ + 0.3167 \times \left\{ y + 0.1922 \times t \right\}$$

Final Equation.

$$-12.98 = -0.9139 \times e - 0.3155 \times f + 0.9139 \times x + 0.3167 \times y + 0.5047 \times t + 2.7412 \times m - 0.022 \times n$$

Disappearance of ω Sagittarii, 1854, September 30^d. 6^h. 16^m. 56^s.03 + t , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	283. 23. 51.75	+	15.0	$\times t$
Moon's Right Ascension in arc	296. 17. 28.05	+	x	+ 0.6540 $\times t$
Moon's N.P.D.	115. 48. 21.96	+	y	- 0.0782 $\times t$
Moon's Horizontal Equatoreal Parallax	59. 26.16	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	16. 13.92	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	296. 43. 54.90	+ e''		
Star's N.P.D.	116. 40. 59.20	+ f	"	"
Geocentric R.A. of corresponding point in arc ..	296. 34. 25.16	+ e	+ 0.1693 $\times t$	- 0.5697 $\times m$
Geocentric N.P.D. of corresponding point	115. 43. 25.03	+ f	- 0.0160 $\times t$	- 3.4542 $\times m$

Geocentric distance of center from corresponding point,

$$16. 2.92 + 0.8568 \times \left\{ +e - x - 0.4847 \times t - 0.5697 \times m \right\} \\ - 0.3094 \times \left\{ f - 0.0160 \times t - 3.4542 \times m \right\} \\ + 0.3074 \times \left\{ y - 0.0782 \times t \right\}$$

Final Equation.

$$+11.00 = +0.8568 \times e - 0.3094 \times f - 0.8568 \times x + 0.3074 \times y - 0.4343 \times t + 0.5806 \times m - 0.9739 \times n$$

Reappearance of α Sagittarii, 1854, September 30^d. 7^h. 30^m. 39^s.82 + t^s , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	301.52.	50.40			+ 15.0	$\times t$
Moon's Right Ascension in arc	297. 5.	38.25	+ x		+ 0.6525	$\times t$
Moon's N. P. D.	115. 42.	24.54	+ y		- 0.0840	$\times t$
Moon's Horizontal Equatorcal Parallax	59. 26.65	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	16. 14.06	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in arc	296. 43.	54.90	+ e''			
Star's N. P. D.	116. 40.	59.20	+ f			
Geocentric R. A. of corresponding point in arc	296. 47.	36.62	+ e		+ 0.1730 $\times t$	+ 0.2217 $\times m$
Geocentric N. P. D. of corresponding point	115. 43.	1.87	+ f		+ 0.0061 $\times t$	- 3.4773 $\times m$

Geocentric distance of center from corresponding point,

$$16. 15.25 + 0.9003 \times \left\{ -e + x + 0.4795 \times t - 0.2217 \times m \right\} \\ + 0.0372 \times \left\{ f + 0.0061 \times t - 3.4773 \times m \right\} \\ - 0.0394 \times \left\{ y - 0.0840 \times t \right\}$$

Final Equation.

$$- 1.19 = - 0.9003 \times e + 0.0372 \times f + 0.9003 \times x - 0.0394 \times y + 0.4352 \times t - 0.3296 \times m - 0.9741 \times n$$

Disappearance of α Sagittarii, 1854, September 30^d. 7^h. 54^m. 33^s.81 + t^s , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc	307. 52.	19.05			+ 15.0	$\times t$
Moon's Right Ascension in arc	297. 21.	14.25	+ x		+ 0.6525	$\times t$
Moon's N. P. D.	115. 40.	25.27	+ y		- 0.0840	$\times t$
Moon's Horizontal Equatoreal Parallax	59. 26.81	$\times \left(1 + \frac{m}{1000}\right)$				
Moon's Semidiameter	16. 14.11	$\times \left(1 + \frac{n}{1000}\right)$				
Star's Right Ascension in Arc	297. 31.	19.20	+ e''			
Star's N. P. D.	116. 35.	13.30	+ f			
Geocentric R. A. of corresponding point in arc	297. 38.	42.74	+ e		+ 0.1710 $\times t$	+ 0.4435 $\times m$
Geocentric N. P. D. of corresponding point	115. 37.	29.15	+ f		+ 0.0125 $\times t$	- 3.4642 $\times m$

Geocentric distance of center from corresponding point,

$$16. 1.44 + 0.8863 \times \left\{ +e - x - 0.4815 \times t + 0.4435 \times m \right\} \\ - 0.1843 \times \left\{ f + 0.0125 \times t - 3.4642 \times m \right\} \\ + 0.1821 \times \left\{ y - 0.0840 \times t \right\}$$

Final Equation.

$$+ 12.67 = + 0.8863 \times e - 0.1843 \times f - 0.8863 \times x + 0.1821 \times y - 0.4444 \times t + 1.0316 \times m - 0.9741 \times n$$

Reappearance of A Sagittarii, 1854, September 30^d. 9^h. 38^m. 38^s. 78 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	325.	56.	31.	20	+ 15.0	$\times t$
Moon's Right Ascension in arc.....	298.	8.	14.	70	+ x	+ 0.6517 $\times t$
Moon's N. P. D.....	115.	34.	15.	37	+ y	- 0.0869 $\times t$
Moon's Horizontal Equatoreal Parallax.....	59.	27.	26	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	16.	14.	23	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	297.	31.	19.	20	+ e''	
Star's N. P. D.....	116.	35.	13.	30	+ f	" "
Geocentric R. A. of corresponding point in arc.....	297.	50.	54.	62	+ e	+ 0.1521 $\times t$ + 1.1754 $\times m$
Geocentric N. P. D. of corresponding point.....	115.	39.	11.	33	+ f	+ 0.0332 $\times t$ - 3.3620 $\times m$
Geocentric distance of center from corresponding point,						

$$16.23.47 + 0.8598 \times \left\{ -e + x + 0.4996 \times t - 1.1754 \times m \right\} \\ + 0.2999 \times \left\{ f + 0.0332 \times t - 3.3620 \times m \right\} \\ - 0.3019 \times \left\{ y - 0.0869 \times t \right\}$$

Final Equation.

$$-9.24 = -0.8598 \times e + 0.2999 \times f + 0.8598 \times x - 0.3019 \times y + 0.4658 \times t - 2.0189 \times m - 0.9742 \times n$$

Reappearance of 139 Tauri, 1854, October 11^d. 15^h. 55^m. 55^s. 41 + t , Greenwich Mean Solar Time.

	°	'	"	"	"	
Right Ascension of Zenith in arc.....	79.	23.	0.	45	+ 15.0	$\times t$
Moon's Right Ascension in arc.....	87.	24.	20.	70	+ x	+ 0.5574 $\times t$
Moon's N. P. D.....	63.	33.	55.	31	+ y	- 0.0461 $\times t$
Moon's Horizontal Equatoreal Parallax.....	54.	38.	96	$\times \left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter.....	14.	55.	48	$\times \left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc.....	87.	14.	37.	35	+ e''	
Star's N. P. D.....	64.	4.	2.	70	+ f	" "
Geocentric R. A. of corresponding point in arc.....	87.	9.	25.	11	+ e	+ 0.1606 $\times t$ - 0.3122 $\times m$
Geocentric N. P. D. of corresponding point.....	63.	40.	32.	96	+ f	+ 0.0092 $\times t$ - 1.4097 $\times m$
Geocentric distance of center from corresponding point,						

$$14.55.47 + 0.8026 \times \left\{ -e + x + 0.3968 \times t + 0.3122 \times m \right\} \\ + 0.4449 \times \left\{ f + 0.0092 \times t - 1.4097 \times m \right\} \\ - 0.4431 \times \left\{ y - 0.0461 \times t \right\}$$

Final Equation.

$$+0.01 = -0.8026 \times e + 0.4449 \times f + 0.8026 \times x - 0.4431 \times y + 0.3430 \times t - 0.3766 \times m - 0.8955 \times n$$

Reappearance of B. A. C. 3579, 1854, December 10^d. 16^h. 25^m. 6^s.50 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	145. 50. 19.35	+	15.0	×	t
Moon's Right Ascension in arc	155. 21. 35.70	+	x	+	0.4781 × t
Moon's N. P. D.	74. 13. 9.00	+	y	+	0.1869 × t
Moon's Horizontal Equatoreal Parallax	54. 24.84	×	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	14. 51.57	×	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	155. 15. 40.80	+	e''		
Star's N. P. D.	74. 54. 59.60	+	f		
Geocentric R. A. of corresponding point in arc	155. 9. 54.44	+	e	+	0.1490 × t - 0.3464 × m
Geocentric N. P. D. of corresponding point.	74. 22. 47.88	+	f	+	0.0059 × t - 1.9317 × m

Geocentric distance of center from corresponding point,

$$14. 49.30 + 0.7310 \times \left\{ -e + x + 0.3291 \times t + 0.3464 \times m \right\} \\ + 0.6513 \times \left\{ f + 0.0059 \times t - 1.9317 \times m \right\} \\ - 0.6507 \times \left\{ y + 0.1869 \times t \right\}$$

Final Equation.

$$+ 2.27 = -0.7310 \times e + 0.6513 \times f + 0.7310 \times x - 0.6507 \times y + 0.1228 \times t - 1.0049 \times m - 0.8916 \times n$$

Reappearance of ι Leonis, 1854, December 10^d. 19^h. 1^m. 9^s.05 + t^s , Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	184. 57. 21.90	+	15.0	×	t
Moon's Right Ascension in arc	156. 36. 1.35	+	x	+	0.4762 × t
Moon's N. P. D.	74. 42. 37.14	+	y	+	0.1903 × t
Moon's Horizontal Equatoreal Parallax	54. 27.07	×	$\left(1 + \frac{m}{1000}\right)$		
Moon's Semidiameter	14. 52.23	×	$\left(1 + \frac{n}{1000}\right)$		
Star's Right Ascension in arc	156. 6. 38.25	+	e''		
Star's N. P. D.	75. 7. 11.50	+	f		
Geocentric R. A. of corresponding point in arc	156. 23. 38.73	+	e	+	0.1311 × t + 1.0205 × m
Geocentric N. P. D. of corresponding point.	74. 33. 51.92	+	f	-	0.0179 × t - 1.9996 × m

Geocentric distance of center from corresponding point,

$$14. 48.05 + 0.7775 \times \left\{ -e + x + 0.3451 \times t - 1.0205 \times m \right\} \\ - 0.5910 \times \left\{ f - 0.0179 \times t - 1.9996 \times m \right\} \\ + 0.5918 \times \left\{ y + 0.1903 \times t \right\}$$

Final Equation.

$$+ 4.18 = -0.7775 \times e - 0.5910 \times f + 0.7775 \times x + 0.5918 \times y + 0.3915 \times t + 0.3884 \times m - 0.8922 \times n$$

ROYAL OBSERVATORY, GREENWICH.

M E A S U R E S

OF

THE RINGS AND BALL OF SATURN,

MADE WITH A DOUBLE-IMAGE MICROMETER

UPON THE EAST EQUATOREAL.

1854.

MEASURES of the RINGS of SATURN, with a Double-Image Micrometer on the East Equatoreal.

Day and Mean Solar Hour.	Part measured.	Number of Measures.	Observed Value in Arc.	Approx. Angle of Position of measured Part.	Observer.	Remarks.
1854. d h Feb. 2. 9	Extreme Length of outer Ring ...	6	43.19	88	M	
	Extreme Breadth of outer Ring ..	6	17.29	178	M	
Feb. 3. 8	Extreme Length of outer Ring ...	6	42.96	89	M	
	Extreme Breadth of outer Ring ..	6	17.36	179	M	
Mar. 1. 8	Extreme Length of outer Ring ...	6	40.68	88	M	
	Extreme Breadth of outer Ring ..	6	16.81	178	M	
Mar. 2. 8	Extreme Length of outer Ring ...	6	40.57	88	M	The images not so steady as on the preceding evening.
Mar. 3. 8	Extreme Length of outer Ring ...	8	40.20	89	M	Haze prevalent, but great care was taken with the measurement.
Mar. 17. 8	Extreme Length of outer Ring ...	6	40.00	87	M	A splendid night.
	Extreme Breadth of outer Ring ..	6	16.65	177	M	

The observations above were made in the ordinary way, by bringing the images of the limbs of the outer ring successively into contact on opposite sides. As this was impracticable in measuring the ball and the inner ring, &c., the method pursued was to bring one limb of one of the images (taken as an object of reference) successively into contact with the parts of the other image whose measures were required, as is explained in the tabular arrangement which follows.

DIAMETERS OF THE RINGS AND BALL OF SATURN.

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi-diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1854. d h Feb. 2. 9	Right image of left side of exterior edge of outer ring.	Left image of right side of exterior edge of outer ring	r 4.751	r 10.646	r 5.895	r 2.983	r 2.912	" 21.08	M
	"	Left image of outer edge (right) of black division . }	4.851		5.795		2.812	20.36	M
	"	Left image of inner edge (right) of black division . }	4.988		5.658		2.675	19.36	M
	"	Left image of inner edge (right) of inner bright ring	5.541		5.105		2.122	15.36	M

One revolution of the micrometer = $7''.239$.

DIAMETERS OF THE RINGS AND BALL OF SATURN—*continued.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1854. ^d ^h Feb. 2. 9	Right image of left side of exterior edge of outer ring.	Left image of right side of } ball.....	^r 6.381	^r 10.646	^r 4.265	^r 2.983	^r 1.282	" 9.28	M
	"	Left image of left side of } ball.....	8.731		1.915		1.068	7.73	M
	"	Left image of left side of } interior edge of inner ring }	9.599		1.047		1.936	14.01	M
	"	Left image of inner edge of } dark division (left)..... }	9.933		0.713		2.270	16.43	M
	"	Left image of outer edge of } dark division (left)..... }	10.085		0.561		2.422	17.53	M
	"	Left image of left side of } exterior edge of outer ring }	10.660						M
	Left image of right side of exterior edge of outer ring.	Right image of left side of } ' exterior edge of outer ring }	16.656		6.010		3.027	21.91	M
Feb. 3. 8	Right image of left side of exterior edge of outer ring.	Left image of right side of } exterior edge of outer ring }	16.529	10.646	5.883	2.968	2.915	21.10	M
	"	Left image of outer edge of } dark division (right) ... }	16.459		5.813		2.845	20.60	M
	"	Left image of inner edge of } dark division (right) ... }	16.217		5.571		2.603	18.84	M
	"	Left image of right side of } interior edge of inner ring }	15.692		5.046		2.078	15.04	M
	"	Left image of right limb of } ball.....	14.850		4.204		1.236	8.95	M
	"	Left image of left limb of } ball.....	12.557		1.911		1.057	7.65	M
	"	Left image of left side of in- } terior edge of inner ring . }	11.610		0.964		2.004	14.51	M
	"	Left image of left side } of inner edge of dark division	11.150		0.504		2.464	17.84	M
	"	Left image of outer edge } (left) of dark division.... }	11.053		0.407		2.561	18.54	M
	"	Left image of left side of ex- } terior edge of outer ring.. }	10.567						
	Left image of right side of exterior edge of outer ring.	Right image of left side of } exterior edge of outer ring }	4.787		5.859		2.891	20.93	M

One revolution of the micrometer = $7''.239$.

February 2 and 3. The readings for "left image of left side of exterior edge of outer ring" correspond to coincidence of images.

DIAMETERS OF THE RINGS AND BALL OF SATURN — *continued.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1854. ^d ^h Mar. 1. 8	Right image of left side of exterior edge of outer ring.	Left image of right side of exterior edge of outer ring }	^r 4.998	^r 10.646	^r 5.648	^r 2.810	^r 2.838	" 20.54	M
	"	Left image of outer edge (right) of dark division . }	5.128		5.518		2.708	19.60	M
	"	Left image of inner edge (right) of dark division . }	5.320		5.326		2.516	18.21	M
	"	Left image of right side of interior edge of inner ring }	5.786		4.860		2.050	14.84	M
	"	Left image of right limb of ball }	6.635		4.011		1.201	8.69	M
	"	Left image of left limb of ball }	8.876		1.770		1.040	7.53	M
	"	Left image of left side of interior edge of inner ring }	9.685		0.961		1.849	13.39	M
	"	Left image of inner edge (left) of dark division ... }	9.950		0.696		2.114	15.30	M
	"	Left image of outer edge (left) of dark division ... }	10.229		0.417		2.393	17.32	M
	"	Left image of left side of exterior edge of outer ring }	10.646						M
	Left image of right side of exterior edge of outer ring.	Right image of left side of exterior edge of outer ring }	16.250		5.604		2.794	20.23	M
Mar. 2. 8	Right image of left side of exterior edge of outer ring.	Left image of right side of exterior edge of outer ring }	5.027	10.646	5.619	2.803	2.816	20.38	M
	"	Left image of outer edge (right) of dark division .. }	5.217		5.429		2.626	19.01	M
	"	Left image of inner edge (right) of dark division .. }	5.459		5.187		2.384	17.26	M
	"	Left image of right side of interior edge of inner ring }	5.838		4.808		2.005	14.51	M
	"	Left image of right limb of ball }	6.633		4.013		1.210	8.76	M
	"	Left image of left limb of ball }	8.997		1.649		1.154	8.36	M
	"	Left image of left side of interior edge of inner ring }	9.620		1.026		1.777	12.86	M

One revolution of the micrometer = $7''.239$.

March 1. A splendid night. The reading for "left image of left side of exterior edge of outer ring" corresponds to coincidence of images.

March 2. The reading for "left image of left side of exterior edge of outer ring" corresponds to coincidence of images.

DIAMETERS OF THE RINGS AND BALL OF SATURN—*continued*.

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1854. d h Mar. 2. 8	Right image of left side of exterior edge of outer ring.	Left image of inner edge (left) of dark division ... }	r 10.110	r 10.646	r 0.536	r 2.803	r 2.267	" 16.41	M
	"	Left image of outer edge (left) of dark division ... }	10.268		0.378		2.425	17.56	M
	"	Left image of left side of exterior edge of outer ring }	10.687						M
	Left image of right side of exterior edge of outer ring.	Right image of left side of exterior edge of outer ring }	16.260		5.614		2.811	20.35	M
Mar. 3. 8	Left image of right side of exterior edge of outer ring.	Right image of left side of exterior edge of outer ring }	16.259	10.646	5.613	2.777	2.836	20.53	M
	"	Right image of outer edge (left) of dark division ... }	16.091		5.445		2.668	19.31	M
	"	Right image of inner edge (left) of dark division ... }	15.799		5.153		2.376	17.20	M
	"	Right image of left side of interior edge of inner ring }	15.437		4.791		2.014	14.58	M
	"	Right image of left limb of ball..... }	14.657		4.011		1.234	8.93	M
	"	Right image of right limb of ball..... }	12.271		1.625		1.152	8.34	M
	"	Right image of right side of interior edge of inner ring }	11.658		1.012		1.765	12.78	M
	"	Right image of inner edge (right) of dark division .. }	11.430		0.784		1.993	14.43	M
	"	Right image of outer edge (right) of dark division .. }	10.900		0.254		2.523	18.27	M
	"	Right image of right side of exterior edge of outer ring }	10.705						M
	Right image of left side of exterior edge of outer ring.	Left image of right side of exterior edge of outer ring }	5.127		5.519		2.742	19.85	M
Mar. 17. 8	Left image of right side of exterior edge of outer ring.	Right image of left side of exterior edge of outer ring }	16.139	10.646	5.493	2.763	2.730	19.76	M
	"	Right image of outer edge (left) of dark division ... }	16.000		5.354		2.591	18.76	M
	"	Right image of inner edge (left) of dark division ... }	15.765		5.119		2.356	17.06	M

One revolution of the micrometer = $7'' \cdot 239$.

March 3. The reading for "right image of right side of exterior edge of outer ring" corresponds to coincidence of images.

DIAMETERS OF THE RINGS AND BALL OF SATURN—*concluded.*

Day and Hour of Observation.	Object of Reference.	Part brought into contact with Object of Reference.	Micrometer Reading for Part brought into contact.	Assumed Reading for Coincidence of Images.	Difference of Micrometer Readings.	Assumed Semi- diameter of Ring.	Distance of Part measured from Center in Revolutions.	Distance of Part measured from Center in Arc.	Observer.
1854. d. h. Mar. 17. 8	Left image of right side of exterior edge of outer ring.	Right image of left side of interior edge of inner ring }	r 15.225	r 10.646	r 4.579	r 2.763	r 1.816	" 13.15	M
	"	Right image of left limb of ball..... }	14.500		3.854		1.091	7.90	M
	"	Right image of right limb of ball..... }	12.313		1.667		1.096	7.93	M
	"	Right image of right side of interior edge of inner ring }	11.600		0.954		1.809	13.10	M
	"	Right image of inner edge (right) of dark division .. }	11.238		0.592		2.171	15.71	M
	"	Right image of outer edge (right) of dark division .. }	10.947		0.301		2.462	17.82	M
	"	Right image of right side of exterior edge of outer ring }	10.612						M

One revolution of the micrometer = $7''.239$.

March 17. The reading for "right image of right side of exterior edge of outer ring" corresponds to coincidence of images.
In general the observations of the dark division were very difficult, and the results are subject to doubt.

SYNOPSIS OF THE PRECEDING RESULTS.

DAY of OBSERVATION.	DISTANCE OF ASSUMED CENTER FROM									
	EAST EDGE of					WEST EDGE of				
	Exterior Side of Outer Ring.	Exterior Side of Dark Division.	Interior Side of Dark Division.	Inner Limb of Inner Bright Ring.	Ball.	Ball.	Inner Limb of Inner Bright Ring.	Interior Side of Dark Division.	Exterior Side of Dark Division.	Exterior Side of Outer Ring.
1854.	"	"	"	"	"	"	"	"	"	"
February 2	21.91	17.53	16.43	14.01	7.73	9.28	15.36	19.36	20.36	21.08
3	20.93	18.54	17.84	14.51	7.65	8.95	15.04	18.84	20.60	21.10
March 1	20.23	17.32	15.30	13.39	7.53	8.69	14.84	18.21	19.60	20.54
2	20.35	17.56	16.41	12.86	8.35	8.76	14.51	17.26	19.01	20.38
3	20.53	19.31	17.20	14.58	8.93	8.34	12.78	14.43	18.27	19.85
17	19.76	18.76	17.06	13.15	7.90	7.93	13.10	15.71	17.82	...
Mean for 1854, February 23.. }	20.62	18.17	16.71	13.75	8.02	8.66	14.27	17.30	19.28	20.59



